Digital HiNote VP 550, 575 Series

Service Guide

Part Number: ER-PD1WF-SM. A01

March 1997

The FCC wants you to know...

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

All external cables connecting to this basic unit must be shielded. For cables connecting to PCMCIA cards, see the option manual or installation instructions.

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Preface

This guide describes how to test, troubleshoot, and remove and replace the Digital HiNote VP 500 series Models VP 550, 575 notebook computer Field Replaceable Units (FRUs).

Audience

This service guide is written specifically for service engineers.

Organization

This guide contains the following:

- Chapter 1: *Overview* – This chapter introduces the Digital HiNote VP 500 series notebook computers. It provides a system overview and describes the controls, indicators, and hot keys.

- Chapter 2: *System Restoration* – This chapter provides procedures for restoring the operating system and system specific drivers.

- Chapter 3: *System BIOS* – This chapter provides information related to the system BIOS and its Setup program.

- Chapter 4: *Troubleshooting* – This chapter provides a systematic method of isolating problems with the Digital HiNote VP 500 series of notebook computers.

- Chapter 5: *FRU Replacement* – This chapter provides detailed procedures for replacing the Digital HiNote VP 500 series notebook computer Field Replaceable Units (FRUs).

- Chapter 6: *FRU List and Illustrated Parts Breakdown* – This chapter provides a list of the Field Replaceable Units (FRUs), parts breakdown and parts list for the Digital HiNote VP 500 series Models VP 550, 575 notebook computer.

- Appendix A: *Specifications* – This appendix lists the notebook computer's specifications.

- Appendix B: *Device Mapping* – This appendix contains tables listing the default settings for of the notebook computer's memory map, I/O address map, interrupt map, and DMA map.

- Appendix C: *System Connector Pin Assignments* – This appendix shows the location of the connectors on the system motherboard and provides a listing of the pinouts for these connectors.

- Appendix D: *Schematics* – This appendix contains the schematic drawings for the system.

1
Overview

This chapter introduces the Digital HiNote VP 500 series notebook computers. It provides a system overview and describes the controls, indicators, and hot keys.

System Overview

The HiNote VP 500 series are high-performance portable computers designed for the mobile professional.

Figure 1-1 shows a functional block diagram of the notebook computer. The following sections provide an overview of the different functions.

CPU and Chip Set

The HiNote VP 500 series notebook computers use the Intel P54CSLM 120/133 processors and P55C 150/166/175 processors mounted on a daughter card.

The following chip set is used to implement the core functions of the system.

- Intel Mobile Triton chip set provides system controller & PCI IDE controller functions

- SMC669FR provides support for floppy disk controller (FDC), two serial ports (one serial port and one FIR) and one parallel port

- Intel 80C51SL provides the keyboard controller and scanner and the battery management unit

- Cirrus CL-PD6832 is used as the PCI PCMCIA controller

- ESS ES1878 for the audio subsystem
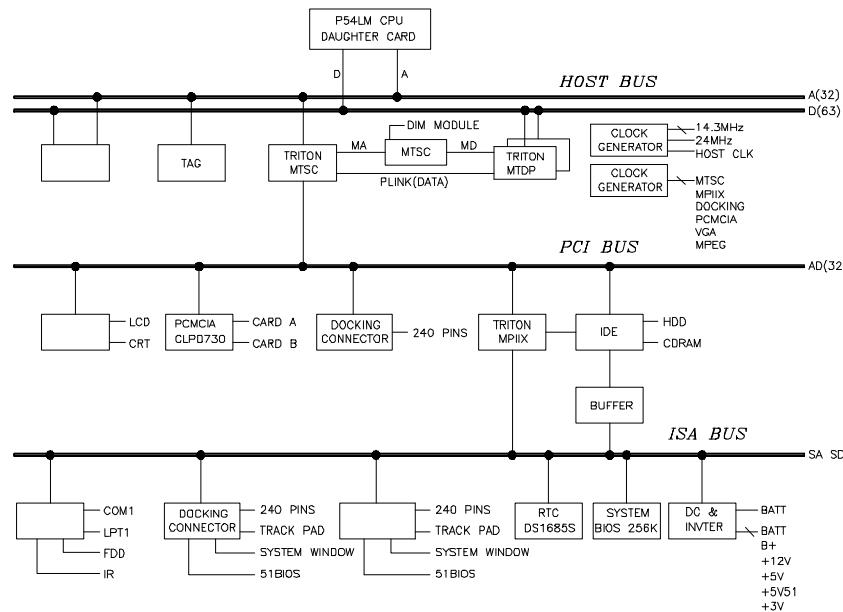
Figure 1-1 Functional Block Diagram

Memory

The system comes with 16MB of on-board DRAM for system memory and 256KB of L2 cache memory (on selected models).

System memory can be upgraded to a total of 24MB, 32MB, 48MB, and 80MB. The upgrade is performed by installing two 4MB, 8MB, 16MB, or 32MB DIMM modules. Two identical memory modules must be installed when adding additional memory.

BIOS

The system has a 256KB Flash ROM for system BIOS (Phoenix BIOS 4.04). The BIOS provides support for the following:

- Suspend to RAM/Disk

- Full APM 1.2 supported

- Password protection(System and HDD)

- Auto-configured with replicator/docking/modules

- Windows 95 ready with PnP

- 32KB ROM for 51SL keyboard controller

- Gas-gauge for battery status information

- Various hot-keys for system control

Video Controller Chip

Video support is provided by the Neo Magic NM2093 VGA Controller Chip. This chip provides the following functions:

- PCI Bus support

- Simultaneous display supported

- Integrated 128-bit wide, 7Mbits Display Memory – 1.1MB of Video RAM
- Integrated programmable linear address feature accelerates GUI performance
- Supports NON-interlaced CRT monitors with resolutions up to 1024 x 768/256 colors
- Advanced power management features minimize power consumption during:
    - Normal operation
    - Standby mode
    - SUSPEND mode
    - VESA DPMS for monitor by 2093 (option)
- Graphic accelerator for WINDOWS application
- 3.3V/5V panel Interface support
    - bit BLT Engine
    - Memory mapped I/O
    - Linear addressing
    - Color expansion
    - 64x64 hardware cursor
    - 64x64 or 128x128 hardware ICON
- High resolution SVGA (800x600) panel
    - TFT displays support a maximum of 64K colors
    - DSTN displays support a maximum of 64K colors

I/O Ports

The system has the following I/O ports:

- One 9 pin Serial port, 16550A compatible
- One 25 pin Parallel port, EPP/ECP Capability
- One 15 pin CRT port
- 6 pin external full keyboard/numeric key-pad / PS/2 mouse connector
- One microphone in port & one speaker out port
- 240 pin docking connector that supports PS2 mouse port, AT-keyboard, 1S1P, CRT, audio ports, MIDI port, and AC jack.
- Built-in microphone
- Built-in IRDA FIR transmitter-receiver

Option Modules

The following expansion modules can be installed in the system:

Secondary LiIon Battery

Components, Controls and Indicators

This section shows the locations and provides a description of the different components, controls, and indicators on your Digital notebook computer.

Front and Side Components (Panel Closed)

	Component	Description
❶	Removable Hard Drive	Easily removable and upgradable.
❷	Lid Release	Slide the two latches located on either side of the notebook toward you to open the LCD panel.
❸	Main Battery Module	Removable battery module that can be replaced with a charged battery.
❹	Expansion bay	Supports the 12X CD-ROM/FDD Combination module and optional lithium-ion secondary battery module.
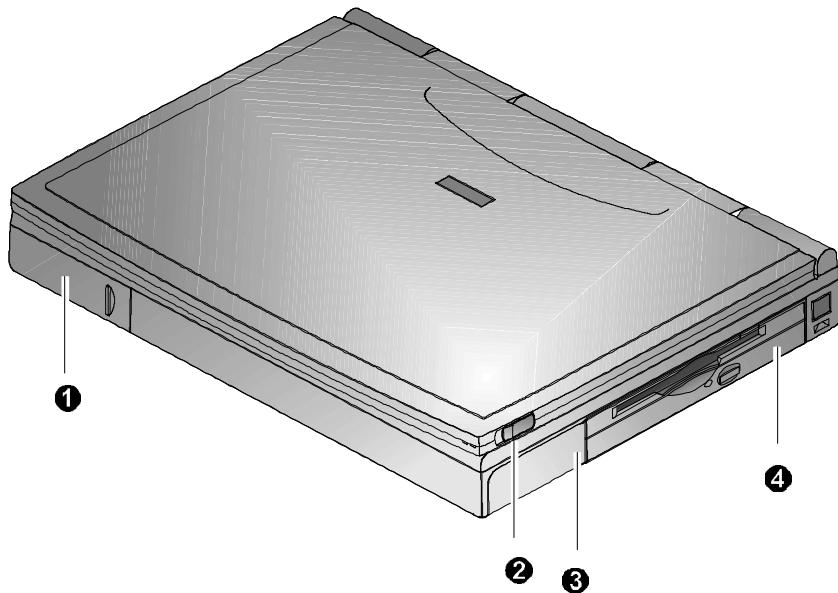
Figure 1-2 Right Front View (Panel Closed)

Rear View

	Component	Description
❶	Fast Infrared Interface	Allows wireless data transfer between the notebook and other IR devices. (Selected models only)
❷	Serial (COM) Port	A serial device connects to this port.
❸	Parallel LPT Port	A parallel device, such as a printer, connects to this port.
❹	Reset Button	Using a pen or paper clip, press this button to reboot the system. All unsaved data will be lost.
❺	VGA Display Port	An external VGA or SVGA monitor connects to this port.
❻	Minidock Port	This 240-pin port allows you to connect the notebook to the Minidock Port Replicator.
❼	External Keyboard or PS/2 Mouse Port	An external keyboard or PS/2 mouse connects to this port.
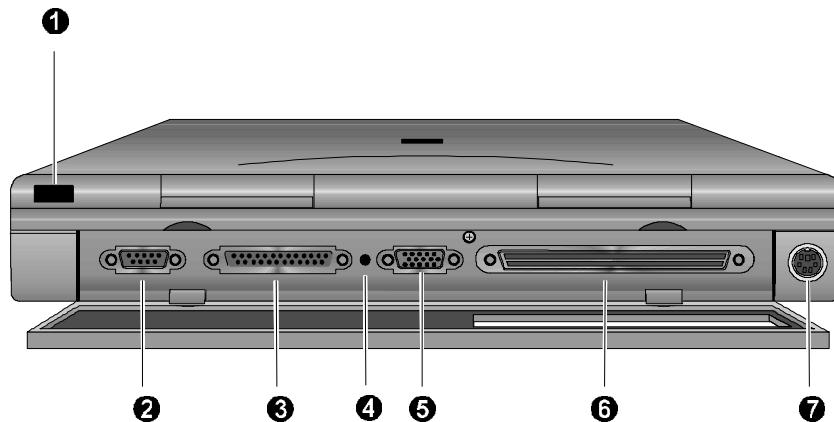
Figure 1-3 Rear View

Left and Side Components

	Component	Description
❶	Speaker-out Port	External speakers or headphones connect to this port.
❷	External Mic Port	An external microphone connects to the notebook.
❸	PC Card Lower Socket Eject Button	Ejects a PC Card Type II from the lower socket or to eject a Type III card.
❹	PC Card Socket	Insert PC Card Type II or Type III cards into this socket.
❺	PC Card Upper Socket Eject Button	Ejects a PC Card Type II from the upper socket..
❻	AC Power Port	The AC Adapter power cord connects to this port.
❼	Security Lock Port	A Security Lock device, such as a Kensington Lock, connects to this port.
❽	AC Power LED	Lights green when the notebook is operating on AC power.
❾	Battery Charger LED	Lights amber when the battery is being charged. When the battery is fully charged the amber LED turns off.
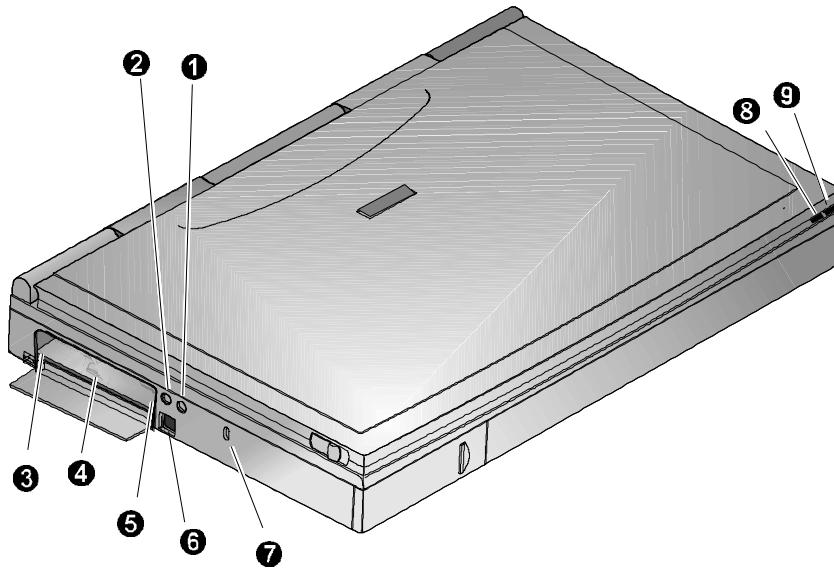
Figure 1-4 Left Front View (Panel Closed)

Right Front View (Panel Open)

	Component	Description
❶	Internal Microphone	Used to record music, voice and sound files.
❷	LCD Display	DSTN or TFT Super VGA back-lit display.
❸	LCD Status Display	Provides system operating status.
❹	Suspend/Resume Button	Turns the notebook on and toggles between the suspend/resume mode. Press [fn + Suspend/Resume] to turn off the notebook.
❺	Lid Switch	Close the notebook's LCD lid to suspend the system. Open the lid to resume the normal operation. The Lid Switch can be configured to CRT display mode from within the Power menu of the BIOS Setup Program. Please refer to Chapter 2.
❻	Internal Stereo Speakers	Used to hear sound files and system sounds through stereo speakers.
❼	Touch pad	A touch sensitive pointing device providing all the functions of a two-button mouse.
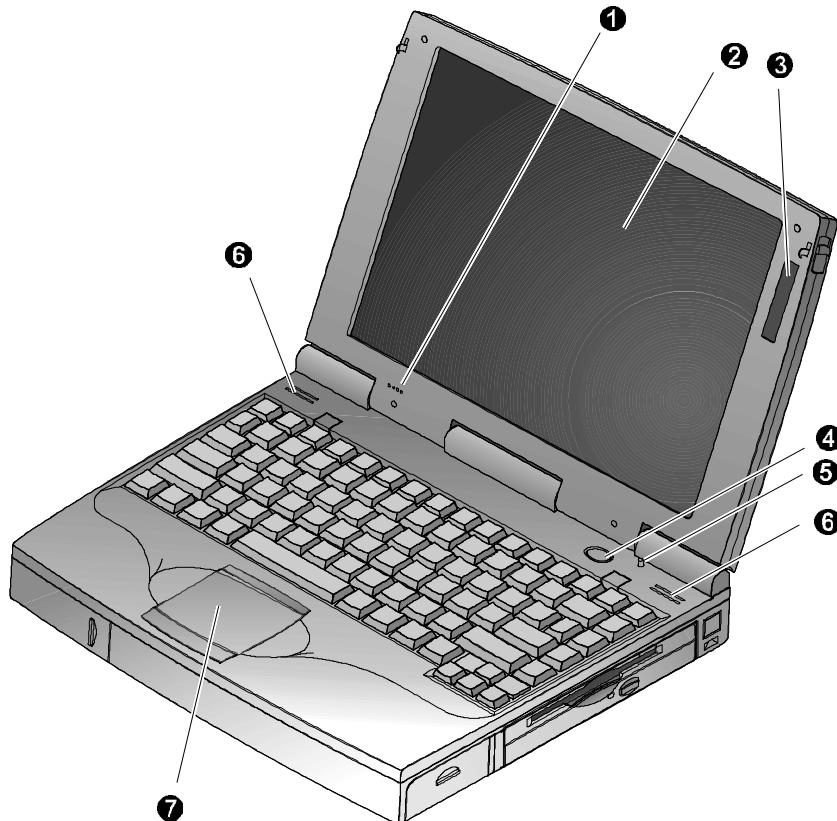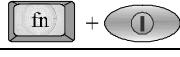
Figure 1-5 Right Front View (Panel open)

Controlling Power

Unique to Digital notebook's, the suspend/resumebutton not only enables you to take advantage of the built-in power saving features but also turns the notebook on and off.

Action	How to...
On	Press the Suspend/Resume button to turn the system on.
Suspend	When the system is on, press this button to place your system in Suspend mode.
Resume	Press the Suspend/Resume button to resume normal operation from the Suspend mode.
Off	To completely shut off your notebook, press and hold [fn + suspend/resume] button until a system beep sounds, indicating that the system has been successfully turned off.
Suspend Lid Switch	In its factory default mode, closing the LCD lid will also enter the notebook into Suspend mode. Refer to Chapter 3, in the section labeled *Power Menu* for instructions on how to configure the Lid Switch function.

Battery Charge Gauge (in LCD Status Display)

Icon	When Displayed, Indicates…
	76% to 100% battery operating time remaining. When the lines within this icon are rotating, it indicates that the battery is being charged. When the rotating stops, the battery is fully charged.
	51% to 75% battery operating time remaining.
	26% to 50% battery operating time remaining.
	Low battery to 25% battery operating time remaining. The system's warning beep will sound. Save your work, replace the low battery with a fully charged one or use an AC power source to run the notebook. The [fn + F7] keys shut off the warning beep. It also mutes all audio.
	System has ceased charging the battery. An abnormal condition exists causing the core of the battery to reach its maximum temperature and battery charging has been suspended..

LCD Status Display

Icon	When Displayed Indicates...
	Embedded Numeric Keypad is enabled by the hot key combination. The keyboard's embedded keypad functions as a cursor control keypad. When displayed in conjunction with the Num Lock icon, the embedded keypad functions as a numeric keypad.
	Scroll Lock is enabled by a hot key combination.
	Num Lock is enabled by a hot key combination.
	Caps Lock is enabled.
	Hard Disk Drive/CD-ROM is being accessed by the system.
	Floppy Disk Drive is being accessed by the system.
	The external monitor (CRT) or Simul mode is enabled. If the icon is blinking, the system is in Save to RAM mode.

Keyboard Hot Keys

Hot keys are activated by holding down the [fn] key (located in the lower left corner of the keyboard) and pressing the desired function key.

[fn] +	Function
[fn + esc]	Places the computer in Standby Mode.
[fn+A]	Places the computer in Save to RAM Mode.
[fn+F]	All open data and system settings are Saved to Disk.
[fn + F1]	Decreases brightness level.
[fn + F2]	Increases brightness level.
[fn + F4]	Switches between the three display modes: 1. LCD Display 2. LCD Display and External Monitor 3. External Monitor only Each time you press this hot key combination the computer changes to the next display mode.
[fn + F5]	Decreases the display contrast (DSTN screens only).
[fn + F6]	Increases the display contrast (DSTN screens only).
[fn + F7]	Enables or disables audio/speaker output including system beep indicating low battery.
[fn + F8]	Toggles the keyboard's embedded key pad on and off. When used by itself, it functions as a cursor control keypad. Press [fn+F9] and then the [fn+F8] hot key combination to use the notebook's numeric embedded keypad.
[fn + F9]	Toggles Num Lock on and off. Used by itself, fn+F9 enables an external keyboard numeric keypad.
[fn + F10]	Toggles Scroll Lock on and off. The Scroll Lock functions in certain applications, leaving the cursor in its current position while moving the screen in the direction of the arrow pressed.
[fn + home/pause]	Pauses the display output. Press a key to resume.
[fn + end/break]	If Break is enabled, pressing this hot key sends a system break.
[fn + PrScr/ SysReq]	Determined by application software.
[fn + ↑]	Increases the audio volume.
[fn + ↓]	Decreases the audio volume.

Related Information

Documentation

DIGITAL HiNote VP 550, VP 575 Series User's Guide	English	ER-PD1WF-UA
	French	ER-PD1WF-UP
	Italian	ER-PD1WF-UI
	German	ER-PD1WF-UG
	Spanish	ER-PD1WF-US
	Japanese	ER-PD1WF-UJ
	Simple Chinese	ER-PD1WF-U2
Digital HiNote VP 550, VP 575 Series Quick Reference Card	English	ER-PD1WF-BA
	French	ER-PD1WF-BP
	Italian	ER-PD1WF-BI
	German	ER-PD1WF-BG
	Spanish	ER-PD1WF-BS
	Japanese	ER-PD1WF-BJ
	Simple Chinese	ER-PD1WF-B2
Quick Setup Guide	English, French, Italian, German, Spanish, Japanese	ER-PD1WF-IM
	English, Dutch, Danish, Swedish, Norwegian, Finnish	ER-PD1WF-IX
	English, Simple Chinese	ER-PD1WF-I2
AC Adapter Bulletin	English, French, Italian, German, Spanish, Japanese	ER-PB1WF-DM
DIGITAL HiNote System CD		AG-R49UA-BE

World Wide Web

Information such as drivers, BIOS updates, and on-line documentation is available from Digital's World Wide Web Site.

The URL for the site is: HTTP://WWW.WINDOWS.DIGITAL.COM/

Bulletin Boards

Digital maintains a BBS for its customers. This BBS has information such as drivers, BIOS updates, and on-line documentation. The BBS number is: (508)496-8800

2
System Restoration

This chapter provides information on how to restore the operating system and drivers on a Digital HiNote VP 500 series notebook computer. It provides instructions on how to create a bootable floppy for the system and how to restore the system using the bootable floppy or the DIGITAL HiNote System CD.

_____ **Caution** _____

Do not compress the boot drive using compression utilities. It will cause the notebook computer's Save to File feature to not function properly.

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Reinstalling/Installing Drivers

Reinstalling Drivers – The procedures for reinstalling certain drivers over an existing installation is different than installting the drivers on a clean installation. For information on how to reinstall drivers, refer to the latest version of the DIGITAL HiNote System CD.

Installing Drivers – In order to restore the system back to its original Digital factory shipped configuration, you must install the HiNote VP 500 Series audio, video, track pad and network drivers (the need to install the network driver depends upon the individual requirements). If you have installed WinNT, you will also want to install the EPM (Enhanced Power Management) driver located in the Driver/WinNT directory. Please refer to Chapter 5 of the User's Guide in the section labeled *Installing PC Cards in WinNT 4.0* for information on EPM features. These drivers are located on the DIGITAL HiNote System CD. To install any of these drivers, please refer to the following instructions:

1. Boot to Windows.

2. Insert the DIGITAL HiNote System CD into the CD-ROM drive.

3. From the Taskbar, click on Start and then Run. In the Run command box type X:\CDInstall (X represents the drive letter of the CD-ROM).

4. At the Welcome screen, click on Next. Then at the Install screen, click on Driver Installation Instructions.

5. Select the driver(s) you wish to install. A readme.txt file will appear. Print the file(s). These are the installation instructions to install the selected drivers(s).

Creating a Bootable Floppy

To create a bootable floppy, perform the following:

1. Boot to Windows. Insert the DIGITAL HiNote System CD into the CD-ROM drive. Click on Start and then Run. In the Run dialog box command line type X:\CDInstall (X: represents the drive letter of the CD-ROM).

2. Click through the Welcome screens until the Install Menu appears.

3. Click on the Utilities box and then click on Next.

4. Click on Create Boot Floppy and click on Next. Click on Next again.

5. Insert a 3½ inch 1.44 MB floppy into the floppy disk drive. Follow the on-screen instructions. The utility (Sysboot.exe) will format the floppy, make the floppy bootable and copy appropriate system files to the floppy. Before creating the boot floppy, ensure that the floppy is NOT write protected. Any previous data on the diskette will be erased.

6. After the bootable floppy has been created, ensure that it is write protected. Paste a label onto the diskette and label it HiNote VP 500 Series Bootable Floppy.

Using the Boot Floppy

The hard drive in the system has been partitioned using the FDISK utility. The hard drive has also been formatted. A "SAVETOFILE.BIN" file has been created for the system by using PHDISKF. Without Save-to-File.bin, it will not be possible to take advantage of the system's Save to Disk power management feature.

FDISK, format and PHDISKF are located on both the DIGITAL HiNote System CD and the bootable floppy, which can be created from the DIGITAL HiNote System CD.

Re-installing the Operating System

To re-install the Windows Operating System on top of the current Operating System, perform the following:

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

_____ **Note** _____

To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be typed from the A: prompt.

_____

2. Insert the Microsoft Operating System CD into the CD-ROM drive.

3. From the bootable floppy Main Menu, choose Option 3 (Re-install).

4. Follow Microsoft's on-screen instructions.

5. Remove the Microsoft Operating System CD and insert the Digital HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

6. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

7. After re-installing the Operating System you should re-install all drivers. Please refer to the section on Reinstalling/Installing Drivers for information on installation procedures.

System Installation

To remove all files from the hard drive and re-install Windows Operating System but NOT remove the hard drive partitions, please perform the following.

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

   _____ **Note**_____

   To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be typed from the A: prompt.

   _____

2. Choose Option 4. This Option will Format the hard disk's drive C: and then create a 86016 KB Save-to-file.bin This file is created by the PHDISKF Utility and enables the use of the notebook's Save to Disk feature.

3. Insert the Microsoft Operating System CD into the CD-ROM drive.

4. Choose Option 5 (Install OS) from the bootable floppy Main Menu. This will run Microsoft's OEMSETUP program from the Microsoft Operating System CD. OEMSETUP runs SCANDISK and then installs the OS.

5. Remove the Microsoft Operating System CD and insert the Digital HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

6. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

7. After re-installing the Operating System you should re-install all drivers. Please refer to the "Reinstalling/Installing Drivers" section of this chapter for information.

8. Create a directory on the hard drive for the operating system installation files.

   Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

   Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

Complete System Restoration

To perform a complete system restoration on a new hard drive or to remove all files and re-partition the hard drive and then install a Microsoft Operating System, please perform the following:

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

_____**Note**_____

To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a
DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be
typed from the A: prompt.

_____

2. Choose Option 7 from the bootable floppy Main Menu. This will initialize the hard disk
   using FDISK. Running FDISK will erase all data from the hard drive. During FDISK,
   you will be prompted for much information.

   When running FDISK, we strongly recommend that you do not enable large disk
   support,(choose NO, when asked). If you choose [YES] you will not be able to install
   WinNT or a WIN95 non-SR2 operating system at a later time. Also make sure you set the
   Active Partition flag to make it bootable.

   _____**Note to Advanced User**_____

   Although OEMSETUP does FDISK the hard drive, the utility is NOT designed to
   run with hard drives 2.1 GB or larger. It will cause unexpected results. Use the
   FDISK Option provided on the boot media.

   _____

3. Choose Option 4. This Option will Format the disk and then create a 86016 KB Save-to-
   file.bin This file was created by the PHDISKF Utility and enables you to use the
   notebook's Save to Disk feature.

4. Insert the Microsoft Operating System CD into the CD-ROM drive.

5. Choose Option 5 (Install OS) from the bootable floppy Main Menu. This will run
   Microsoft's OEMSETUP program from the Microsoft Operating System CD.
   OEMSETUP runs SCANDISK and then installs the OS.

6. Remove the Microsoft Operating System CD and insert the Digital HiNote System CD.
   Run CDInstall. Click on the Next buttons until the Main Install screen appears.

7. Click on Enhancements and Updates, and then click on Next. Follow the on-screen
   instructions. These enhancements update the Microsoft Operating system.

8. After re-installing the Operating System you should re-install all drivers. Please refer to
   the "Installing Drivers" section of this chapter for information.

9. Create a directory on the hard drive for the operating system installation files.

   Windows 95: Create a directory on the hard drive under C:\Windows called Options and
   then make a directory under that called Cabs. The new directory path is
   C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the
   hard drive's C:\Windows\Options\Cabs directory.

   Windows NT: After completing the installation of Windows NT, locate the directory on
   the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating
   system is located, most likely drive C:\. The files in this directory are needed when
   installing certain drivers such as network drivers.

Using the DIGITAL HiNote System CD

This section describes the steps used to install a Microsoft Operating system and drivers onto a new hard drive, or on an existing drive which needs restoration.

Preparing a New Hard Drive

PHDISKF and FDISK are the two utilities needed in order to prepare the hard disk for general use. These utilities can be found on the DIGITAL HiNote System CD. The FDISK utility formats the hard drive while the PHDISKF utility creates a DOS file on the hard drive. This DOS file is necessary in order to take advantage of the notebook's Save to Disk power management feature.

FDISK and Format Disk Utility

The DIGITAL HiNote System CD is a bootable CD. It boots to the A:\ prompt. In the following instructions we will be running the FDISK Utility on a 1.44GB hard drive.

1. Insert the DIGITAL HiNote System CD into the CD-ROM tray. The CD should boot to the A:\ prompt. At the A:\ type FDISK
   the command line should read A:\FDISK.
   Press <Enter>.

2. This will execute the FDISK utility. When asked if you want to enable enlarged disk support, choose [No]. If you choose [Yes], you will not be able to install WinNT or a Win95 non-SR2 operating system.

3. At the FDISK Main Menu, choose 1 to create a DOS partition or logical DOS drive. To choose this option, type the number 1 and press <Enter>.

4. Choose 1 again to create a primary DOS partition by typing 1 and pressing <Enter>.

5. If you wish to make the whole hard drive one large partition, press <Enter> to accept the default Yes. Continue to press the <esc.> key until you have exited FDISK and are at the DOS prompt. Restart the system by pressing Ctrl+Alt+Del. Proceed to step 16. If you wish to create multiple partitions on the hard drive, press the N key (signifying No) and then press <Enter>. Proceed to step 6.

6. FDISK will inform you of the approximate space available on the hard drive and prompts you to enter the percent of disk space or the number of MB you wish to assign for the primary partition. For the purpose of this example, we have chosen to assign drive C: 500MB.

7. Type 500 and press <Enter>. FDISK displays the partition information. Press the <esc.> key to continue.

8. If you wish to make the primary partition C: bootable, type 2 and then press <Enter>. You will be asked to enter the number of the partition you wish to make active (bootable). Type 1, and press <Enter>. Press <esc.> to return to the FDISK Main Menu.

9. If you wish to make more DOS partitions accessible by Win95, press 1, Create DOS Partition or Logical DOS Drive (recommended) at the FDISK Main Menu. If you do not, press <esc.> to exit the Main Menu and then press <esc.> again to exit FDISK. We have chosen to Create a DOS Partition or Logical DOS Drive.

10. Press 2 to create an Extended DOS partition and then press <Enter>. FDISK will give you the available hard disk space. On our 1.44 GB drive, the space remaining is 878MB.

11. If you wish to assign the remaining space as the Extended DOS partition, press <Enter>. If you wish to customize the capacity, type in the amount in MB or percentage of the available space (for ex, 50%) and press <Enter>. We will assign the remaining drive space (878MB) to and Extended DOS partition.

12. After pressing <Enter>, press <esc.>. FDISK will inform you that there are no Logical Drives assigned. Define the size you wish or press <Enter> to accept the default. If you press <Enter> the entire (878MB) capacity will be assigned as drive D:.

13. Type the amount you wish drive D to be assigned. For our purposes we have chosen to assign drive D 400MB, so we type 400. Press <Enter>. FDISK will display the information for drive D: and inform you of the remaining capacity (478MB).

14. Press <Enter> to assign the remaining capacity to drive E:. All Extended DOS partitions have been assigned to logical drives.

15. Press <esc.> to continue. Press <esc.> again to exit the FDISK Main Menu. You will be informed that you need to reboot the system. Press <esc.> to exit FDISK. At the DOS prompt, press Ctrl+Alt+Del to reboot the system.

16. The system will reboot to the CD-ROM. You must now format all partitioned segments of the hard drive.

17. At the DOS prompt, type
   Format C:/S/U and press <Enter>.
   (There must be a space between the word "format" and "C")
   This will format the primary partition C, and copy all system files to the primary drive. If you have created more than one partition you must format them as well. To format the D drive for example, at the DOS prompt type:
   Format D:/U and press <Enter>
   (There must be a space between the word "format" and "D".)

18. Continue until all partitions have been formatted. At the completion of Format Disk, you will be returned to the DOS prompt. Refer to the following section on how to run the PHDISKF Utility.

PHDISKF Utility

You will need to create a DOS File segment on the hard drive in order to take advantage of the Save to Disk Power Management Feature. The DOS file can be created before or after you install the operating system. Creating the DOS file after the installation of the operating system will NOT erase any data from the hard drive. For the purpose of these instructions, we have decided to first create the DOS file and then install the operating system. To use the PHDISKF utility, please refer to the following instructions:

1. Insert the DIGITAL HiNote System CD into the CD-ROM tray. The CD should boot to the A:\ prompt. At the A:\, type PHDISKF /create 86016
   There needs to be a space between the words "PHDISKF" and "/create" and a space between "/create" and "86016".

2. Press <Enter>.

86016 represents the size of the DOS file to be create in KBytes. The equation for determining the DOS file size is 1024 * (80MB + 4MB). 1024 is the number of KBytes per MegaByte. 80MB is the maximum amount of system memory and the additional 4MB is for overhead.

Before you can load the Microsoft Operating System onto the hard drive, you must first load the CD-ROM driver from the DIGITAL HiNote System CD to the hard drive. It is located in the Driver directory.

System Installation

If you want to remove all files from the hard drive and re-install Windows Operating System but NOT remove the hard drive partitions, please perform the following.

1. Insert the Digital HiNote System CD into the CD-ROM drive and power on the system.

2. Run format and then PHDISKF. Please refer to the appropriate sections of this chapter.

3. Remove the Digital HiNote System CD and power off the notebook.

4. Insert the bootable floppy into the floppy drive and turn on the system.

5. At the list of options choose number 2 (exit to DOS). Insert the Microsoft CD into the CD-ROM drive.

6. From the DOS prompt, type the letter that represents the CD-ROM drive, then a colon and a backslash. For example: D:\

7. Enter the command to start the operating system installation:

   Windows 95: D:\win95\setup

   Windows NT: D:\winnt \b   Use this command string if you db not want to create an Emergency Backup Repair disk (recommended). You must include a space between the "winnt" and the "\b".

                    D:\winnt   Use this command if you want to create an Emergency Backup Repair Disk as a part of the installation.

8. Press <Enter> and follow the instructions that appear on the screen to complete the installation.

9. Remove the Microsoft Operating System CD and insert the Digital HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

10. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

11. After re-installing the Operating System you should re-install all drivers. Please refer to the "Installing Drivers" of this chapter for information.

12. Create a directory on the hard drive for the operating system installation files.

   Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

   Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

Complete System Restoration

If you have purchased a new hard drive or you want to remove all files and re-partition the hard drive and then install a Microsoft Operating System, please perform the following:

1. Insert the Digital HiNote System CD into the CD-ROM drive and power on the system.

2. Run FDISK, format the hard drive and then run PHDISKF. These instructions are covered in detail in Appendix B of the User's Guide.

3. Remove the Digital HiNote System CD and power off the notebook.

4. Insert the bootable floppy into the floppy drive and turn on the system.

5. At the list of options choose number 2 (exit to DOS). Insert the Microsoft CD into the CD-ROM drive.

6. From the DOS prompt, type the letter that represents the CD-ROM drive, then a colon and a backslash. For example: D:\

7. Enter the command to start the operating system installation:

   Windows 95: D:\win95\setup

Windows NT:	D:\winnt \b	Use this command string if you do not want to create an Emergency Backup Repair disk (recommended). You must include a space between the "winnt" and the "\b".
	D:\winnt	Use this command if you want to create an Emergency Backup Repair Disk as a part of the installation.

8. Remove the Microsoft Operating System CD and insert the Digital HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

9. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

10. After re-installing the Operating System you should re-install all drivers. Please refer to the "Installing Drivers" section of this chapter for information.

11. Create a directory on the hard drive for the operating system installation files.

   Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

   Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

3
System BIOS

This chapter provides information related to the system BIOS and its Setup program.

BIOS Setup Program

The BIOS (Basic Input and Output System) Setup Program is a menu driven utility that enables you to make changes to the system configuration and tailor the operation of your notebook to suit your individual work needs. It is a ROM-based (Read only Memory) configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery backed-up CMOS RAM, which saves this information even when the power is turned off. CMOS chips are extremely low power consuming. When the system is turned back on, the system is configured with the values found in CMOS.

_____ **Note** _____

The CMOS battery receives a charge when the system is being operated on AC power. If the system is off for more than one year, the CMOS battery will drain and the ROM data will be lost.

_____

By activating user friendly menus, you can configure such items as:

- Hard drives, diskette drives and peripherals

- Password protection from unauthorized use

- Power Management Features

The settings made in the Setup program affect how the notebook performs. It is important to try to understand all the Setup options and to make settings appropriate for the way you use the notebook.

Navigating through the BIOS Setup Program

When turning on the notebook for the first time you may get a message prompting you to run the BIOS Setup program. A warning message may appear on the screen if the hardware configuration is changed or the Power On Self Test (POST) fails. This message will inform you of any errors or invalid settings and prompt you to run Setup to correct the problem.

Even if you are not prompted by a message instructing you to use Setup, at some time in the future you may want to change the configuration of your computer. For example, you may want to make changes to the power management settings, or for security purposes, enable the notebook's password function. It will then be necessary to reconfigure your system using the Setup program so that the computer can recognize these changes.

A few examples of why you may want to run the BIOS setup program follow.

- You want to redefine the communication ports to prevent any conflicts.

- You want to make changes to the Power Management configuration.

- You want to change the password or make other changes to the security setup.

Accessing the BIOS Setup Program

To access the BIOS Setup program, press the F2 key when prompted during bootup. There are three essential elements to the BIOS screens: Menu Bar, Item Specific Help Window and Legend Bar.

Menu Bar

The top of the screen has a menu bar with the following selections :

Main	Changes to the basic system configuration are made from within this menu.
Peripherals	Use this menu to enable and make changes to the system port addresses and modes.
Security	Sets System and Boot/Resume password.
Power	From within this menu, you will be able to configure and enable Power Management features.
Boot	Allows you to specify the device the system will boot from and the boot device sequence.
Exit	Use this menu to save changes, set factory defaults and exit the Setup program.

Item Specific Help

Note that on the right side of each BIOS Setup screen, there is a section labeled *Item Specific Help.* While moving through the Setup program, note that explanations for the currently highlighted field appear in the *Item Specific Help* window.

Legend Bar

At the bottom of the BIOS Setup screen you will notice a legend bar. The keys in the legend bar allow you to navigate through individual setup menus. The following table lists the keys found in the legend bar with their corresponding alternates and functions.

Legend Key	Alternate Key	Function
F1	Alt + H	Displays the General Help window.
ESC		Exits the current menu and returns you to the previous screen.
← or →		Selects a different menu bar item.
↑ or ↓		Moves the cursor up and down between fields.
<Tab>		Cycles the cursor forward through the particular highlighted field. If the field has only one value, the Tab key will move the selection cell down to the next field.
<Shift + Tab>		Cycles the cursor backward through the particular highlighted field . If the field has only one value, the [Tab + Shift] key combination will move the selection cell up to the previous field.
− minus key	F5	Scrolls backwards through the values of the highlighted field.
+ plus key	F6	Scrolls forward through the values of the highlighted field.
F9		Sets the fields for the active menu to their default values.
F10		Sets the fields for the active menu to their previous values.
<Enter>		Executes commands or selects a submenu.

Launching Submenus

Notice that a pointer symbol appears next to selected fields in the menu screens. For example, open the Peripherals Menu and you will see a pointer that resembles a triangle on its side next to the Integrated Peripherals field. This symbol indicates that a submenu can be launched from this field. A submenu contains additional options. To launch a submenu:

1. Move the highlighted cell to the desired Menu Bar item and press <Enter>.

2. Use the legend keys to navigate around the screen and make the needed configuration changes.

3. When you finish, press the [esc] key to exit the submenu and return to the main screen.

General Help

In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. This screen can be called up from any menu by simply pressing the function key, F1 or the [Alt + H] combination. The General Help screen lists the legend keys with their corresponding alternates and functions.

The scroll bar to the right of the help window indicates that there is more information to be displayed. Use the PgUp and PgDn keys or the up and down arrow keys (↑ ↓) to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window press <Enter> or the <Esc> key.

The Main Menu

The following settings are available in the Main Menu screen of the BIOS Setup Program.

```
Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
Main    Peripherals    Security   Power   Boot    Exit
┌─────────────────────────────────────────────┬──────────────────────────┐
│                                              │   Item Specific Help     │
│  Date:               [03/01/1997]            │                          │
│  Time:               [14:06:00]              │                          │
│  Diskette A:         [1.44 MB, 3.5"]         │  <Tab>, <Shift-Tab>, or  │
│  Hard Disk Drive     [C: 1080 MB]            │  <Enter> selects field.  │
│                                              │                          │
│                                              │                          │
│  Total Memory:           16 MB               │                          │
│  Video Memory:           1152 KB             │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
│                                              │                          │
└─────────────────────────────────────────────┴──────────────────────────┘
  F1  Help    ↑↓ Select Item -/+ Change Values      F9  Setup Defaults
  ESC Exit    ←→ Select Menu  Enter Select▶Sub-Menu  F10 Previous Values
```
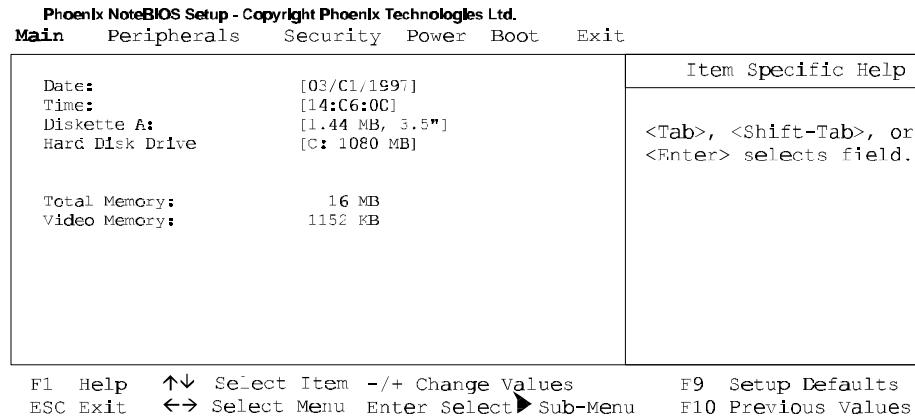
Figure 3-1 The BIOS Setup Main Menu

Field	Settings	Description
Date	Enter current date: month, day, year format	Sets the system to specified date.
Time	Enter current time: hour, minute, second format	Sets the system to specified time.
Diskette A	Display only field	Indicates the presence and size of the FDD.
Hard Disk Drive	Display only field	Indicates the size of your notebook's hard drive.
Total Memory	Display only field	Indicates the amount of total (RAM) memory.
Video Memory	Display only field	Indicates the amount of system video memory.

* Default value.

The Peripherals Menu

Notice the pointer icon next to the words Integrated Peripherals. This indicates the presence of a submenu.

The following settings are available in the Peripherals Menu screen of the BIOS Setup Program.

```
       Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
   Main    Peripherals  Security  Power  Boot    Exit
  ┌─────────────────────────────────────────────┬──────────────────────────┐
  │ ▶ Integrated Peripherals                     │    Item Specific Help    │
  │                                              │                          │
  │                                              │ Set COM port address.    │
  │                                              │                          │
  │   Video Mode            [LCD Mode]           │                          │
  │                                              │                          │
  │   Touch pad:            [Enabled]            │                          │
  │                                              │                          │
  │                                              │                          │
  │                                              │                          │
  │                                              │                          │
  └─────────────────────────────────────────────┴──────────────────────────┘
  F1  Help  ↑↓  Select Item   -/+ Change Values      F9  Setup Defaults
  ESC Exit  ←→ Select Menu    Enter Select▶Sub-Menu  F10 Previous Values
```
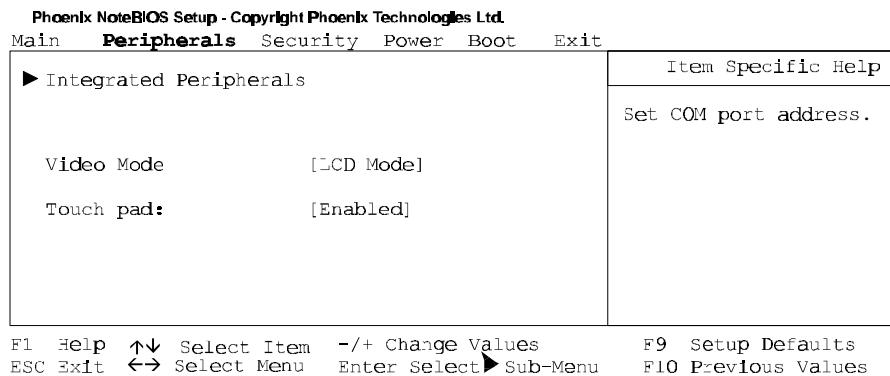
Figure 3-2 The BIOS Setup Peripherals Menu

Field	Settings	Description
Integrated Peripherals	Submenu	Press Enter to set the following port addresses and modes:
		• Serial Port
		• Infrared Port
		• Parallel Port
		• Parallel Port Mode
		• Audio
Video Mode		Sets the Video mode
	• Simul Mode	Allows simultaneous viewing of externally connected monitor (CRT) and the notebook's LCD display.
	• LCD Mode*	Allows viewing of the notebook's LCD only.
	• CRT Mode	Allows viewing of the CRT only.
Touch Pad	• Enabled *	Enables or disables the touch pad. Connecting a mouse to the serial port will disable the Touch Pad.
	• Disabled	

* Default value.

Integrated Peripherals (Peripherals submenu)

Move the highlighted cell to this field and press <Enter> to launch the submenu. The following settings are available in the Integrated Peripherals Menu.

```
Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
        Peripherals
┌─────────────────────────────────────────────┬──────────────────────┐
│        Integrated Peripherals               │   Item Specific Help │
├─────────────────────────────────────────────┼──────────────────────┤
│  Serial Port:         [Auto]                │                      │
│  Infrared  Mode:      [Disable]             │  Set COM port address.│
│  Parallel Port:       [Auto]                │                      │
│  Parallel Mode:       [Bi-Directional]      │                      │
│                                             │                      │
│  Audio:               [Enabled]             │                      │
│    I/O Base Address   [220h]                │                      │
│    IRQ Channel        [IRQ5]                │                      │
│    1st DMA channel    [DMA CH0]             │                      │
│    2nd DMA channel    [DMA CH1]             │                      │
│    FM I/O Base Address [388h]               │                      │
│    MPU I/O Base Address[330h]               │                      │
└─────────────────────────────────────────────┴──────────────────────┘
F1  Help   ↑↓  Select Item   -/+ Change Values      F9  Setup Defaults
ESC Exit   ←→  Select Menu    Enter Select▶ Sub-Menu  F10 Previous Values
```

Figure 3-3 The BIOS Setup Integrated Peripherals Menu

Field	Settings	Description
Serial Port	• Auto* • Disabled • COM 1 (3F8h - IRQ4) • COM 2 (2F8h - IRQ3) • COM 3 (3E8h - IRQ4) • COM 4 (2E8h - IRQ3)	Enables, configures or disables the serial port Set the serial port to disable in order to increase the battery run time.
Fast Infrared	• Auto • Disabled* • COM 1 (3F8h - IRQ4) • COM 2 (2F8h - IRQ3) • COM 3 (3E8h - IRQ4) • COM 4 (2E8h - IRQ3)	Enables, configures or disables the infrared port Set the infrared port to disable in order to increase the battery run time. When the FIR port is enabled two additional configurable settings appear: Uart 2 Mode and Fast IR DMA Channel. Choose the default settings for these fields or refer to the IR device User's manual.
Parallel Port	• Auto* • Disabled • 378h,IRQ7 or IRQ5 • 278h,IRQ7 or IRQ5 • 3BCh,IRQ7 or IRQ5	Enables, configures or disables the parallel port Set the parallel port to disable in order to increase the battery run time.
Parallel Mode	• Disabled • Normal • Bi-Directional * • EPP Mode (Extended Parallel Port) • ECP (Extended Capabilities)	Disables the parallel port. Parallel port is set for data-out mode only. Parallel port permits both data output and data input. Operates only with EPP aware peripherals. Operates only with ECP aware peripherals. See your parallel device user's guide.
Audio	• Enables * • Disables	Enables, configures or disables the audio port. Some DOS based software require editing the Audio chip's settings for DMA Channels, IRQ, etc. Please see your application's user guide for details.

• Default value.

The Security Menu

Select Security from the menu bar to display the following menu.

```
        Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
  Main    Peripherals  Security  Power  Boot  Exit

                                                 ┌─────────────────────┐
                                                 │  Item Specific Help │
   Admin Password:            [User Entry]       ├─────────────────────┤
   Backup Password:           [Execute]          │ Admin password displays
                                                 │ the current status of
                                                 │ your administrator
   Password on Boot:          [Disable]          │ password and allows you
   Password on Resume:        [Disable]          │ to assign or change
                                                 │ this password.
                                                 │
                                                 │
                                                 │
                                                 └─────────────────────┘

   F1  Help   ↑↓ Select Item  -/+ Change Values       F9  Setup Defaults
   ESC Exit   ←→ Select Menu   Enter Select▶ Sub-Menu  F10 Previous Values
```

Figure 3-4 The BIOS Setup Security Menu

Field	Settings	Description
Admin. Password	[Press Enter]	Setting the Admin. Password will limit unauthorized access to the notebook, including the BIOS Setup Program
Backup Password	[Execute]	Backs up Admin. password to diskette.
Password on Boot	• Enabled • Disabled *	When enabled, the system will require the Admin. Password during system boot. If order to enable Password on Boot, you must have an Admin. Password set.
Password on Resume	• Enabled • Disabled *	When enabled, the system will required the Admin. Password when resuming from suspend. In order to enable Password on Resume, Password on Boot must be set.

* Default value.

Setting Admin. Password

To set the Admin. Password, move the highlighted cell to the Admin. Password field and press <Enter>. The following dialogue box will appear:

Set Admin. Password		
Enter new password:	[	]
Confirm new password:	[	]

1. Type in your password and press <Enter>. The password can be up to seven alphanumeric characters. Symbols and other keys are ignored.

2. Type the password in a second time to confirm. Press <Enter>. The System Password is now set.

Changing Admin. Password

To change the Admin. Password, move the highlighted cell to the Admin. Password field and press <Enter>. When the Admin. Password dialogue box appears, enter the new password. Enter it a second time to confirm. The new password is now set.

Deleting Admin. Password

To delete a previously set Admin. Password and disable the password feature

1. Open the Admin. Password dialogue box.

2. With the cursor in the Enter new password field, press <Enter>.

3. The cursor will move to the Re-enter new password field. Press <Enter> again.

4. When the Notice dialogue box appears notifying you that changes have been saved, press <Enter> a third time. The password has been deleted.

Using Backup Password

It is highly recommended that you save backup your Admin. Password to a floppy diskette. To backup the password:

1. Insert a blank formatted floppy disk into the notebook's floppy disk drive.

2. From within the BIOS Setup Program's Security Menu, move the highlighted cell to Backup Password and press <Enter>.

3. The password has successfully been backed up to the floppy. This is a hidden file.

4. Remove the floppy from the drive, label it and then store it in a safe place. Please see Chapter 7 for tips on floppy disk care.

To use the password backed up on floppy, please refer to the following:

1. For the purpose of this illustration, we have assumed that you have set Password on Boot to enable.

2. Upon booting, the system will prompt you for the password. Insert the password floppy into the notebook's floppy disk drive.

3. Type in the word "floppy" and press <Enter>.   The system will continue with its boot.

4. When prompted to by the system, press F2 to enter the BIOS Setup Program. Enter the Security Menu and first delete the existing password by following the steps outlined in the section labeled *Deleting Admin. Password.*

5. After deleting the password, create a new one and back it up to a blank, formatted floppy disk.

The Power Menu

The Power Menu allows you to enable and adjust the notebook's power saving features. Enabling these features will extend the battery run time.

```
        Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
Main    Peripherals   Security   Power   Boot   Exit
                                                    ┌─────────────────────────┐
                                                    │     Item Specific Help  │
  Power Savings:            [Customize]             ├─────────────────────────┤
  AC Power Save:            [On]
  Standby Time-out:         3 min.                   Select Power Management Mode.
  Suspend Time-out:         3 min.                   Choosing modes changes system
  Suspend to Disk Time-out  10 min.                  power management settings.
  Lid Switch Mode           [Suspend]                Maximum setting conserves the
                                                     greatest amount of system
  Hard Disk Time-out        2 min.                   power while Minimum Setting
                                                     conserves power but allow
  Suspend Mode:             [Save to RAM]            greatest system performance.
   Resume on Modem Ring:    [OFF]                    To alter these settings,
   Alarm Resume:            [OFF]                    choose Customize.  To turn
   Alarm Resume Time:       [00:00:00]               off power management, choose
                                                     OFF.

  F1  Help   ↑↓  Select Item   -/+ Change Values       F9  Setup Defaults
  ESC Exit   ←→  Select Menu   Enter Select▶Sub-Menu   F10 Previous Values
```

Figure 3-5 The BIOS Setup Power Menu

Field	Settings	Description
Power Savings	•	Sets the Power Management Mode.
	• Off	Disables all Power Management
	• Customize *	Allows you to customize the Power Management fields (Standby, Suspend, Suspend to Disk, Hard Disk Time-out) to suit your individual work needs.
	• Maximum Performance*	Power Management fields will be set with pre-defined values to provide best system performance with some power conservation.
	• Maximum Battery Life	Power Management fields will be set with pre-defined values to ensure maximum battery run time.
Suspend-to-Disk Time-out	• Disabled • 1, 2, 3, 5 Min. • 10 Min. * • 15, 20, 30 Min.	Indicates the amount of time the system needs to be in Save to RAM before entering Suspend-to-Disk mode. In order to make customized changes to this field, Power Savings must be set to Customize.
Lid Switch	• CRT • Suspend *	Sets action system performs when the notebook's Lid Switch is closed. If connecting an external monitor, set this field to CRT.
Hard Disk Time-Out	• Disabled • 1 Min. • 2 Min. * • 3 Min. • 5, 10, 15, 20 Min.	Indicates the amount of time the hard disk needs to be inactive before it is turned off. In order to make customized changes to this field, Power Savings must be set to Customize.
AC Power Save	• On * • Off	When enabled all system power management is enabled, when operating on AC power. If disabled, all system power management is disabled when operating on AC power.
Suspend Mode	• Save to RAM* • Save to Disk	Selects Suspend mode the system will enter when forced to suspend, i.e. pressing the suspend/resume button.
Resume on Modem Ring	• OFF* • ON	If enabled, a modem ring will resume the system from suspend mode.
Alarm Resume	• OFF * • On	Enables or Disables Alarm Resume Time
Alarm Resume Time	Enter time in a 24 hour format. 13:00 = 1:00 p.m.	Allows you to specify the time the system will resume.

* Default value.

The Boot Menu

From this menu you can choose where the system looks to boot from. You can also prioritize the different boot devices.

```
Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
Main    Peripherals  Security  Power  Boot  Exit
                                            ┌──────────────────────────┐
                                            │     Item Specific Help    │
  1. Diskette Drive                         │                          │
                                            │ Select item to relocate using │
                                            │ the Up and DOWN arrow keys. │
  2. Hard Drive                             │ Use the '+' and '-' keys to │
                                            │ move the highlighted boot │
                                            │ device up ('+') or down  │
  3. CD-ROM Drive                           │ ('-') in the priority list. │
                                            │                          │
                                            │                          │
                                            │                          │
                                            │                          │
                                            └──────────────────────────┘

  F1  Help    ↑↓  Select Item   -/+ Change Values
  ESC Exit    ←→  Select Menu          ▶
```
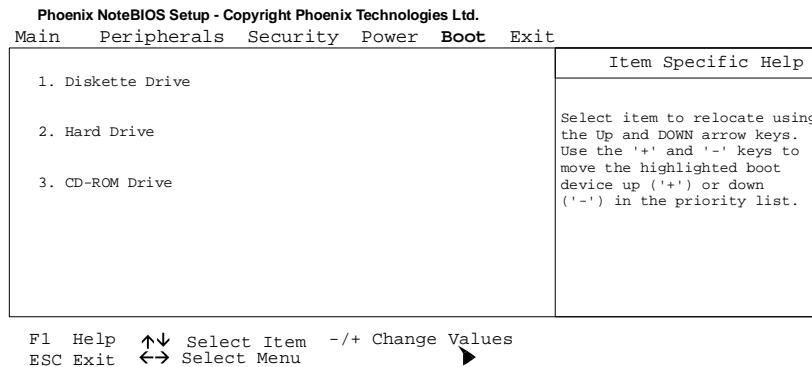
Figure 3-6 The BIOS Setup Boot Menu

Field	Action	Description
Boot Sequence		This field allows you to prioritize which device the system looks at to boot from. Move the highlighted cell to the device you wish to select. Use the + or - key to set its priority in the list.
	• Diskette First*	The system will attempt to boot from drive A. If the drive is empty or a non-system disk is present, the system will attempt to boot from the next drive of priority.
	• Hard Disk Only	The system will boot from the hard disk drive C only.
	• CD-ROM	The system will boot from the CD-ROM.

* Default value.

The Exit Menu

Enter the Exit Menu to save changes, set factory defaults or exit the Setup program.

Field	Action	Description
Save Changes & Exit	<Enter>	Saves the current changes and exits the BIOS Setup Program.
Discard Changes & Exit	<Enter>	Discards the current changes and exits the BIOS Setup Program.
Get Default Values	<Enter>	Loads the factory default values for each of the fields in the BIOS Setup Program To keep default values and exit the BIOS Setup Program, you must move the highlighted cell to the Save Changes & Exit field and press the <Enter> key.
Load Previous Values	<Enter>	Discards any changes made during the current BIOS configuration session, and loads the prior session's values. You cannot exit the BIOS through this field.
Saves Changes	<Enter>	Saves the changes made during the current BIOS configuration session. You cannot exit the BIOS through this field.

```
         Phoenix NoteBIOS Setup - Copyright Phoenix Technologies Ltd.
  Main    Peripherals  Security  Power  Boot  Exit
                                               ┌─────────────────────────┐
                                               │    Item Specific Help    │
     Save Changes & Exit                       │                          │
     Discard Changes & Exit                    │ Saves current changes    │
     Get Default Values                        │ and exits SETUP.         │
     Load Previous Values                      │                          │
     Save Changes                              │                          │
                                               │                          │
                                               │                          │
                                               │                          │
                                               │                          │
                                               └─────────────────────────┘

   F1  Help  ↑↓  Select Item   -/+ Change Values        F9  Setup Defaults
   ESC Exit  ←→  Select Menu   Enter Select▶Sub-Menu    F10 Previous Values
```
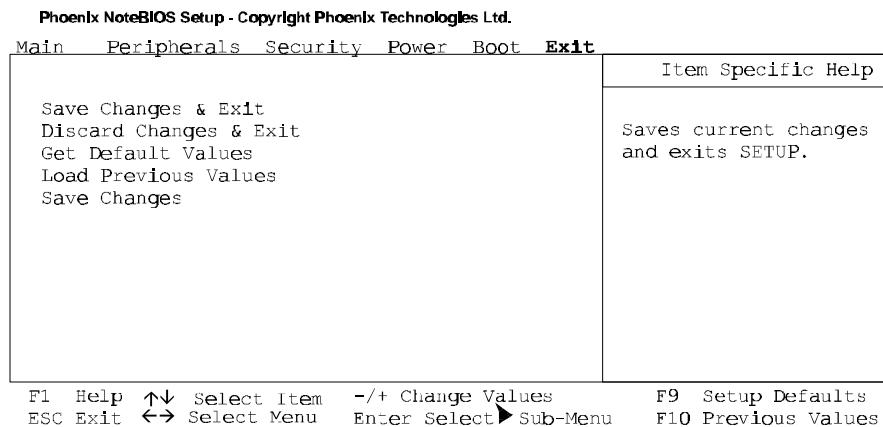
Figure 3-7 The BIOS Setup Exit Menu

Modifying Flash BIOS

The Digital HiNote VP 500 Series notebook computer has a flash updatable system BIOS. As improvements are made to the system BIOS they are made available from Digital's Web site or BBS.

Web Site: HTTP://WWW.WINDOWS.DIGITAL.COM

BBS: (508)496-8800

Updating Flash BIOS

The Flash BIOS update come as a self-extracting file that creates a bootable floppy disk. After downloading the update procedure you restore the update image to floppy disk. This procedure creates a bootable floppy with the PHLASH update program. The BIOS update is provided with a set of instructions on how to use it.

Before running the BIOS update procedure set up the notebook computer as follows:

- Connect the AC adapter. For the BIOS update to run the system has to be running from its AC power source.
- Remove any peripheral devices from the system:
    - PCMCIA devices
    - Port Replicator
- Set the System BIOS to its factory default settings

To run the BIOS update:

1. Insert the BIOS Update disk in the floppy drive.
2. Cold boot the system.
   a) Press the [fn] + Suspend/Resume button to power off the system
   b) Press the Suspend/Resume button to cold boot the system
3. Follow the instructions provided by the update program.

Restoring the Flash BIOS

If for some reason the system BIOS becomes corrupted the BIOS chip located under the DC-to-DC converter on the system motherboard will have to be replaced.

4
Troubleshooting

This chapter provides a systematic method of isolating problems with the Digital HiNote VP 500 Models VP 550, VP 575 series of notebook computers. It is assumed that you have a basic understanding of DOS-based computer systems as well as a knowledge of standard troubleshooting procedures. This manual is written under the assumption that the problems are indeed related to the notebook computer itself. The improper usage of the system and application software problems are excluded in this chapter.

The system BIOS power on self-tests (POST) are integral to the system and detect certain errors with the system board. They use a series of beep codes to identify certain system board problems.

The troubleshooting procedures when followed step by step, can help isolate system problems.

Troubleshooting Tips

In general, troubleshooting involves an organized system of approach to problem solving. Try to isolate the problem and identify the defective device (hardware) or improper setting (software). When you have a problem, you should do a thorough visual inspection of the notebook computer.

- If none of the indicators are lit and you cannot hear the HDD spinning, then the notebook computer is probably not receiving power.

- Make sure the power cord is plugged in, and the AC adapter is securely connected. The LEDs on the AC adapter and the system should be on when connected to a working AC source.

- If you are using a power strip or surge protector, ensure that these devices are turned on.

Often problems are caused by improperly connected cables.

- If you are using peripherals such as the mouse or keyboard, make sure they are properly connected to their respective ports. Ensure that none of the connectors' pins are bent or broken.

- Check all cables connected to the notebook computer. If any are cut, frayed, or damaged in any way, replace them right away. Never use a damaged cable. A damaged cable is not only a fire hazard, it may also cause a short circuit, resulting in irreparable damage to the notebook computer.

- Check all internal connections to ensure that they are secure. Often problems can occur because a connection is loose or backwards.

Verify that all test equipment works before using it to test a malfunctioning component.

Verify that a component is the only malfunctioning part of the computer by replacing the malfunctioning component with a properly functioning one, and then try to run the system. For example, if you have tested an FDD in a test computer and found it to be bad, you should also try a good FDD in the malfunctioning FDD's computer to be sure that another component (such as the FDD controller) is not bad as well.

As with assembly and disassembly, make sure you have adequate lighting, the right tools, and a stable clean working environment.

The examples that follow provide useful tips and information that will help isolate and solve some of the more common problems that may be encountered.

System Start Failure

When you turn on the computer, the system hangs before completing or starting the POST (power on self test). Power supply failure, post failure, and boot-up failure can result in a system start failure.

Power Supply Failure

Problem	Troubleshooting Procedure
You turn on the power switch and the following conditions apply: • There is no panel display • There is no noise coming from the HDD • The power indicator light is off.	If you are operating the notebook computer using the battery: • The system could be in suspend. Press the Suspend/Resume button. • The battery connection is loose. Remove and reinstall the battery. • The battery power is depleted. Plug in the AC adapter, or replace the battery. • The battery needs to be reformed. Reform the battery. • The system could be experiencing a hang. Press the reset button (Figure 1-3). If you are operating the notebook computer using the AC adapter: • Check that the AC adapter is plugged into an operational power supply. • Check that the AC adapter is connected securely to the notebook computer's AC adapter socket. • Check to see if the Power LED on the computer is lit and the LED on the AC adapter is lit. If not lit, then the AC adapter is bad. Replace the AC adapter, and test the notebook computer again. • Press the Suspend/Resume button • Press the system's "Reset Button" located on the back of the unit between the serial and parallel port connectors. If the above items are functioning, then the notebook computer's internal power circuit is probably damaged. Check the power circuit of the notebook computer.

Boot-up Failure

Problem	Troubleshooting Procedure
You turn on the notebook computer and the following conditions apply: • The notebook computer's power is on. • There is no screen display	• System in Suspend Mode. Press the Suspend/Resume button. • System hung possibly hung after using a screen saver. Press the Reset button located on the back on the unit (Figure 1-3). Check the DRAM connections to be sure that they are secure. • Check the LCD connections. • Check the system board power circuit.

Post Failure

Problem	Troubleshooting Procedure
You turn on the computer and the following happens: • There is power to the system. • The HDD seems to be spinning. • The screen is operational, and error codes and messages are displayed.	• A POST failure usually indicates a keyboard, memory, or HDD failure. • Check the error code or message against the error codes and messages in this chapter.

Password Failure

Problem	Troubleshooting Procedure
You do not have the password or the password is not known.	• To clear the password, short Jumper 5 on the motherboard.

LCD Panel Failure

Problem	Troubleshooting Procedure
You turn on the computer and one of the following conditions apply: • The system is working, but there is no LCD panel display. • The system is working, but the LCD panel display vertical or horizontal lines. • The backlight comes on, but there is no display. • There is a display, but you have garbled characters on the screen.	• Make sure that the LCD cable is securely connected to the Motherboard. • Make sure that the LCD cables are securely connected to the inverter. • If the cables are securely connected and the LCD still doesn't work, replace the LCD panel and test the system again. • If the display is garbled, verify the video setup in the operating system's Control Panel Display application. If these are correct, there is probably a VGA chip failure. Replace the motherboard.

CRT Failure

Problem	Troubleshooting Procedure
The notebook computer has power, the notebook computer's LCD panel is working and one of the following conditions apply: • The notebook computer's LCD panel is working. • There is no display on the CRT. • The color of the CRT is wrong. • There is a display, but the display is not stable.	• Make sure the CRT output is enabled. • Make sure that the CRT's power is on anf the power cables are securely connected. • Make sure that the CRT to notebook computer cable connection is secure. Check the CRT port on the notebook computer to make sure the connection is secure, and that there are no damaged pins or connectors. • Make sure the settings in the operating system's Control Panel Display application are supported by the monitor. • If the CRT still doesn't work, change to a different CRT and try again. • If the color is bad, adjust the Monitor's color controls (if any).

Notebook Computer Keyboard Failure

Problem	Troubleshooting Procedure
The notebook computer is fully powered-on. However, when pressing any of the keys on the keyboard, one of the following events occurs: • Pressing on the key doesn't have any effect. • Incorrect characters are displayed on the screen. • One stroke of a key produces too many characters on the screen.	• If incorrect characters are displayed, check the COUNTRY.SYS settings in the operating system to see if an incorrect language is being used by the system. • Make sure that the keyboard cable is securely connected into the keyboard connector. • Check the keyboard circuit. • Replace the keyboard and check again. • Replace the keyboard controller BIOS chip located in the memory compartment on the bottom of the system unit.

External Keyboard or PS/2 Mouse Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on, and the keyboard is working. One of the following conditions occur: • Pressing keys on the external keyboard has no effect. • Pressing the key on the external keyboard gives incorrect characters. • The mouse cursor on the screen doesn't move in conjunction with the external mouse.	• Make sure that the external mouse or keyboard's connection to the notebook computer's PS/2 mini-DIN connector is secure. • Make sure the mouse trackball and postion sensors are clean and free of dust. • Replace the external mouse or keyboard and try again. • If the system still doesn't work, test the mini-DIN keyboard circuit. • If incorrect characters are displayed, check the COUNTRY.SYS settings in DOS to see if an incorrect language is being used by the system.

HDD Failure

Problem	Troubleshooting Procedure
When you try to access the HDD, one of the following conditions occur: • There is a message indicating that the HDD doesn't exist. • You can't read from the HDD. • You can't write to the HDD.	• Check to make sure that the BIOS settings are correct. Refer to Chapter 2 for BIOS information. • Make sure that the HDD connection is secure. • Install the HDD into another HiNote VP 550, VP 575notebook computer and test it. • If the HDD works in a test notebook computer, the HDD controller on the motherboard is probably bad. Test the motherboard.

FDD Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on. The HDD is functioning correctly. When you try to access the FDD, one of the following conditions occurs: • You can't read from the FDD. • You can't write to the FDD. • You can't hear the FDD motor spinning, and the LED indicator light isn't on.	• Make sure the CD-ROM/FDD module is properly seated. • Switch to a different floppy disk and try again. Make sure that the floppy isn't write protected. • Clean the FDD's heads. • Change the CD-ROM/FDD module and test again. • If the FDD is OK, than there is probably an I/O chipset failure. Replace the main board.

CD-ROM Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on. The HDD is functioning correctly. When you try to access the CD-ROM, one of the following conditions occurs: • You can't read from the CD-ROM. • You can't hear the CD-ROM motor spinning, and the LED indicator light isn't on.	• Make sure the CD-ROM/FDD module is properly seated. • Switch to a different CD-ROM disk and try again. • Clean the CD-ROM's lens. • Change the CD-ROM/FDD module and test again. • If the CD-ROM is OK, than there is probably an I/O chipset failure. Replace the main board.

Battery Failure

Problem	Troubleshooting Procedure
The notebook computer's AC power works. When trying to use battery power, the notebook computer doesn't operate. However, when the AC Adapter is connected, the battery charge indicator flashes.	• Make sure that the battery contacts are in good condition. • Make sure that the battery terminals are clean. If need be, clean the terminals with contact cleaner. • Form the battery and try again. • Change the battery and try again. • Check to make sure that the AC power supply (the AC adapter and AC adapter cord) are OK. If they are not supplying the correct voltage, it could damage the system.

Check Points and Error Messages

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O address 80h. Use this code during troubleshooting to establish at what point the system failed and what routine was being performed.

If the BIOS detects a terminal error condition, it halts POST after:

- Issuing a terminal error beep code and

- Attempting to display the error code on upper left corner of the screen and on the port 80h LED display

If the system hangs before the BIOS can process the error, the code displayed at port 80h is that of the last test performed. In this case, the screen does not display the error code.

Phoenix BIOS Test Points

The following is a list of the checkpoint codes written at the start of each test and the beep codes issued for terminal errors:

Code	Beeps	POST Routine Description
02		Verify Real Mode
04		Get CPU type
06		Initialize system hardware
08		Initialize chipset registers with initial POST values
09		Set in POST flag
0A		Initialize CPU registers
0C		Initialize cache to initial POST values
0E		Initialize I/O
0F		Initialize the local bus IDE
10		Initialize Power Management
11		Load alternate registers with initial POST values
12		Jump to UserPatch0
14		Initialize keyboard controller
16	2-2-3	BIOS ROM checksum
18		8254 timer initialization
1A		8237 DMA controller initialization
1C		Reset Programmable Interrupt Controller
20	3-1-1	Test DRAM refresh
22	3-1-3	Test 8742 Keyboard Controller
24		Set ES segment register to 4 GB
28		Autosize DRAM
2A		Clear 512K base RAM
2C	3-4-1	Test 512K base address lines
2E	3-4-3	Test 512K base memory
30		Base 64K RAM Error
32		Test CPU bus-clock frequency
34		Test CMOS RAM
35		Initialize alternate chipset registers
37		Reinitialize the chipset
38		Shadow system BIOS ROM

Code	Beeps	POST Routine Description
39		Reinitialize the cache
3A		Autosize cache
3C		Configure advanced chipset registers
3D		Load alternate registers with CMOS values
40		Set Initial CPU speed
42		Initialize interrupt vectors
44		Initialize BIOS interrupts
46	2-1-2-3	Check ROM copyright notice
47		Initialize manager for PCI Option ROMs
48		Check video configuration against CMOS
49		Initialize PCI bus and devices
4A		Initialize all video adapters in system
4C		Shadow video BIOS ROM
4E		Display copyright notice
50		Display CPU type and speed
51		Initialize EISA board
52		Test keyboard
54		Set key click if enabled
56		Enable keyboard
58	2-2-3-1	Test for unexpected interrupts
5A		Display prompt "Press F2 to enter SETUP"
5C		Test RAM between 512 and 640k
60		Test extended memory
62		Test extended memory address lines
64		Jump to UserPatch1
66		Configure advanced cache registers
68		Enable external and CPU caches
6A		Display external cache size
6C		Display shadow message
6E		Display non-disposable segments
70		Display error messages
72		Check for configuration errors
74		Test real-time clock
76		Check for keyboard errors
7C		Set up hardware interrupt vectors
7E		Test coprocessor if present
80		Disable onboard I/O ports
82		Detect and install external RS232 ports
84		Detect and install external parallel ports
86		Re-initialize onboard I/O ports
88		Initialize BIOS Data Area
8A		Initialize Extended BIOS Data Area
8C		Initialize floppy controller
90		Initialize hard-disk controller
91		Initialize local-bus hard-disk controller

Code	Beeps	POST Routine Description
92		Jump to UserPatch2
94		Disable A20 address line
96		Clear huge ES segment register
98		Search for option ROMs
9A		Shadow option ROMs
9C		Set up Power Management
9E		Enable hardware interrupts
A0		Set time of day
A2		Check key lock
A4		Initialize typematic rate
A8		Erase F2 prompt
AA		Scan for F2 key stroke
AC		Enter SETUP
AE		Clear in-POST flag
B0		Check for errors
B2		POST done-prepare to boot operating system
B4		One beep
B6		Check password (optional)
B8		Clear global descriptor table
BC		Clear parity checkers
BE		Clear screen (optional)
BF		Check virus and backup reminders
C0		Try to boot with INT 19
DO		Interrupt handler error
D2		Unknown interrupt error
D4		Pending interrupt error
D6		Initialize option ROM error
D8		Shutdown error
DA		Extended Block Move
DC		Shutdown 10 error

The following Error Codes are related to the Boot Block in the Flash ROM:

E2		Initialize the chipset
E3		Initialize refresh counter
E4		Check for Forced Flash
E5		Check HW status of ROM
E6		BIOS ROM is OK
E7		Do a complete RAM test
E8		Do OEM initialization
E9		Initialize interrupt controller
EA		Read in the bootstrap code
EB		Initialize all vectors
EC		Boot the Flash program
ED		Initialize the boot device
EE		Boot code was read OK

If the BIOS detects error 2C, 2E, or 30 (base 64K RAM error), it displays an additional word of information reflecting the bit or address line that failed. For example, if "2C 0002" is displayed, address line 1 (represented by bit one) has failed. If "2E 1020" is displayed, then data bits 12 and 5 have failed in the upper 16 bits.

The BIOS sends the same information to the port 80h LED display. The check point code is followed by a delay, the high order byte, another delay, and then the low order byte of the error. This is be repeated continuously.

Warning Messages

The following is an alphabetic list of error and status messages which the PhoenixBIOS can generate and an explanation of each message. Many of the messages below refer to the built in Setup program.

Message	Description
nnnn Cache SRAM Passed	nnnn is the amount of system cache in kilobytes successfully tested.
Diskette drive A error	Drive A: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Entering SETUP	Starting Setup program
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly.
nnnn Extended RAM Passed	nnnn is the amount of RAM in kilobytes successfully tested.
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit.
Fixed Disk 0 Failure or Fixed Disk 1 Failure or Fixed Disk Controller Failure	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup to ensure that the fixed-disk type is correctly identified.
Incorrect Drive A type run SETUP	Type of floppy drive A: not correctly identified in Setup.
Invalid NVRAM media type	Problem with NVRAM access.
Keyboard controller error	The keyboard controller failed test. You may have to replace keyboard or controller.
Keyboard error	Keyboard not working.
Keyboard error nn	BIOS discovered a stuck key and displays the scan code for the stuck key.
Keyboard locked Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS	Run SETUP Monitor type not correctly identified in Setup
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn Parity error found in the system bus	BIOS attempts to locate the address but failed and display it on the screen.
Parity Check 2 nnnn Parity error found in the I/O bus	BIOS attempts to locate the address but failed and display it on the screen.

Message	Description
Press <F1> to resume, <F2> to Setup	Displayed after any recoverable error message: Press <F1> to start the boot process or <F2> to enter Setup and change any settings. <F2> Press <F2> to enter SETUP Optional message displayed during POST.
Previous boot incomplete	Default configuration used
Previous POST did not complete successfully	POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail.
Real time clock error	Real-time clock fails BIOS test. May require board repair.
Shadow RAM Failed at offset: nnnn	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.
nnnn Shadow RAM Passed	Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System BIOS shadowed	System BIOS copied to shadow RAM.
System cache error	Cache disable RAM cache failed the BIOS test. BIOS disabled the cache.
System CMOS checksum bad - run SETUP	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system.
System RAM Failed at offset: nnnn	System RAM failed at offset nnnn of in the 64k block at which the error was detected.
nnnn System RAM Passed	nnnn is the amount of system RAM in kilobytes successfully tested.
System timer error	The timer test failed. Requires repair of system board.
UMB upper limit segment address: nnnn	Displays the address of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS which may be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

5

FRU Replacement

This chapter provides detailed procedures for replacing the Digital HiNote VP 500 series notebook computer Field Replaceable Units (FRUs). Unless otherwise noted the replacement procedures for the FRUs are the reverse of the removal procedures.

Required Tools

You will need the following tools to remove and replace the HiNote VP 500 series FRUs.:

- #0 and #1 Phillips Head Screwdrivers
- 3/16 inch and 7/32 inch Nut Drivers

Removing the Battery

The battery is located on the right side of the system unit (Figure 5-1).

To remove the battery pack:

1. Slide the battery lock/release clip to the release position.

2. Pull the Battery Pack out of the system unit as shown.
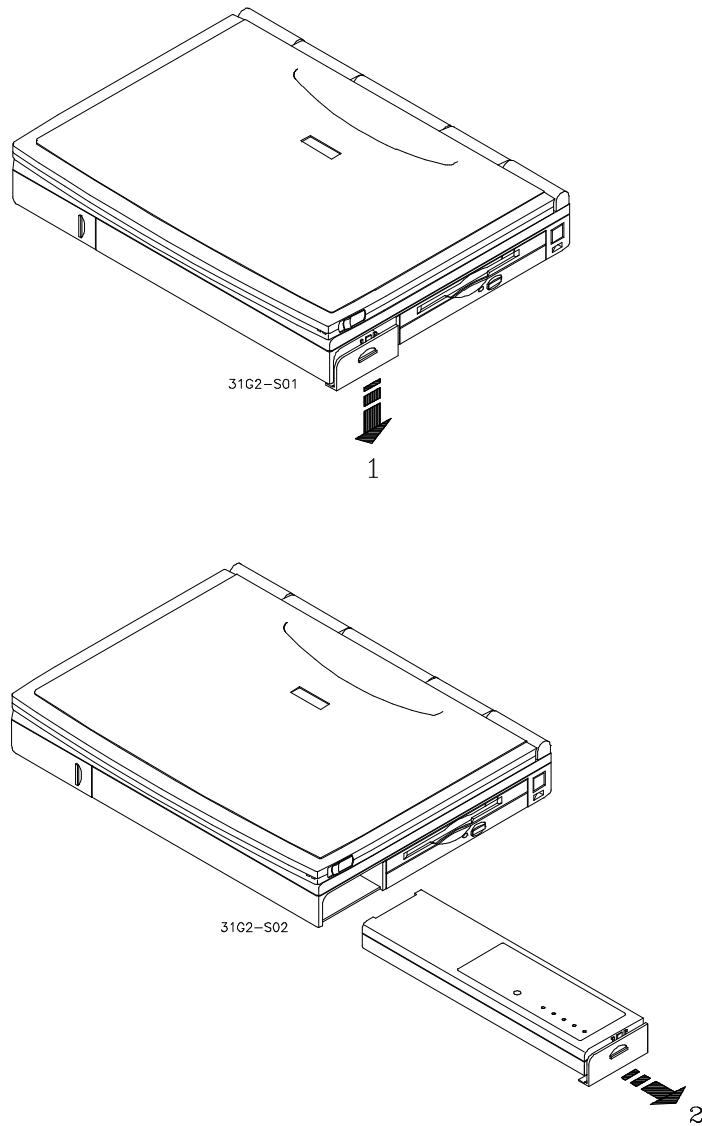
Figure 5-1 Removing the Battery

Removing the 12x CD/FDD Combination Module and Supplementary Battery

To remove the 12x CD/FDD Combination module or supplementary battery:

1. Slide the locking button (1), located on the bottom of the system, in the direction shown (Figure 5-2).

2. Slide and hold the module release latch (2) in the direction shown.

3. While holding the module release latch in position, slide the module out of the system unit (3).
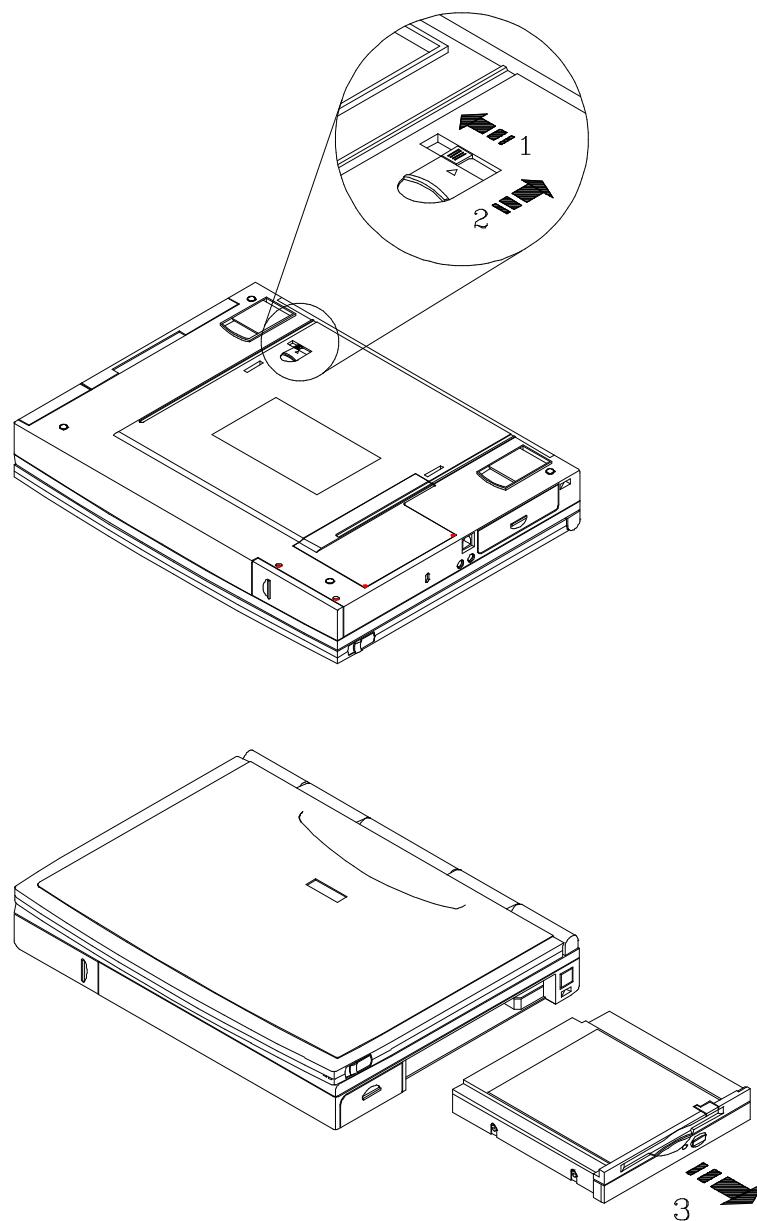
Figure 5-2 Removing the FDD /CD Module or Supplementary Battery

Removing the HDD Assembly

To remove the HDD:

1. Slide the HDD module plastic cover (1) in the direction shown (Figure 5-3).

2. Remove the two Philips head screws (2) located on the bottom of the notebook computer. They secure the HDD assembly in the system unit and prevent it from being damaged.

3. Gently remove the HDD from its housing, by pulling on its handle in the direction shown (3).

_____**Installation Note**_____

If the HDD assembly is installed upside down, the screws on the assembly may get caught on some plastic inside the system. To remove the drive slide a piece of paper (yellow sticky) between the unit and the plastic and slide the HDD assembly out of the system.

_____
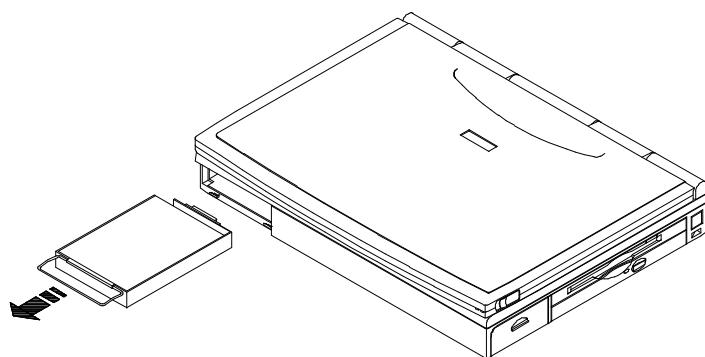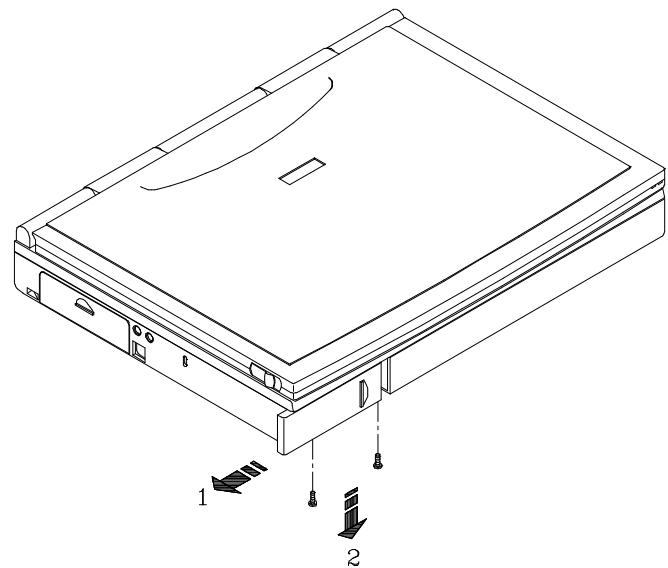
Figure 5-3 Removing HDD

Removing the Keyboard

To remove the keyboard:

1. Remove the keyboard screw caps by pulling them toward the front of the system and then up as shown (Figure 5-4).

2. Remove the two screws that hold the keyboard in place.

3. Lift the keyboard up and rotate it toward the LCD display. The keyboard cable is removed in step 5.

_____ **CAUTION** _____

Be careful not to damage the keyboard cable when lifting up the keyboard.
_____
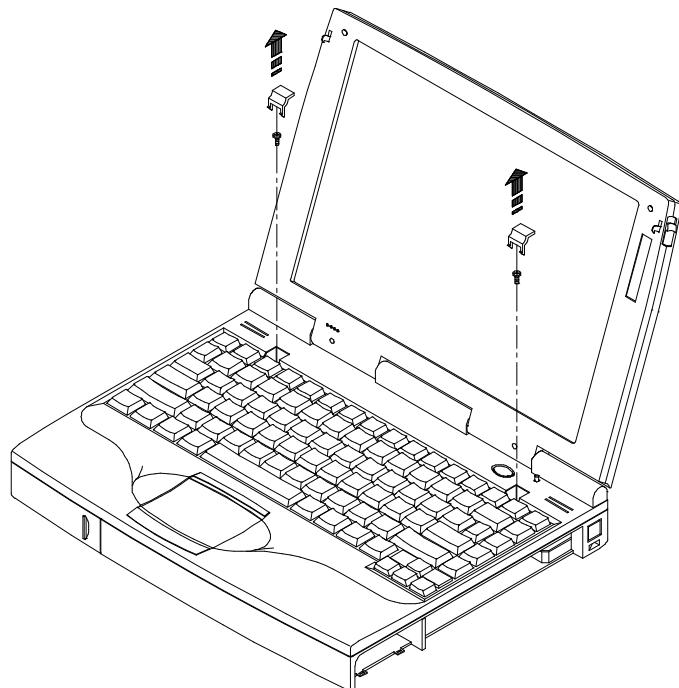
Figure 5-4 Removing Keyboard Screw Caps and Screws

4. Remove the heatsink (Figure 5-5).

    a) Remove the two screws that hold the heatsink in place.

    b) Carefully lift the heatsink up and remove it from the system by sliding the keyboard cable through the slot in the heatsink.

5. Disconnect the keyboard cable (Figure 5-5).

    a) Release the cable latch by flipping it up. The latch is located across the back of the connector.

    b) Pull the cable out of the connector.

31G2−S04
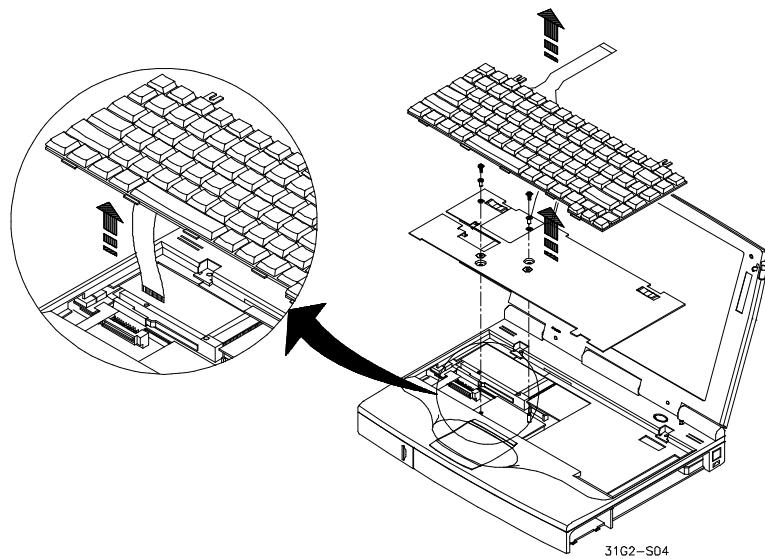
Figure 5-5 Removing Heatsink and Keyboard

Removing the CPU

The CPU daughter card is located under the heatsink. To remove the CPU daughter card:

1. Remove the keyboard and heatsink (Figure 5-4, Figure 5-5).

_____ **Installation Note** _____

When replacing the CPU heatsink, the torque of the heatsink screws should be set to 2.3~3.0kg of force per cm².
_____

2. Pull up on the CPU daughter card to remove if from the system (Figure 5-).

_____ **Installation Note** _____

When installing the CPU daughter card, align each of the connectors with the mating connector on the motherboard.
_____
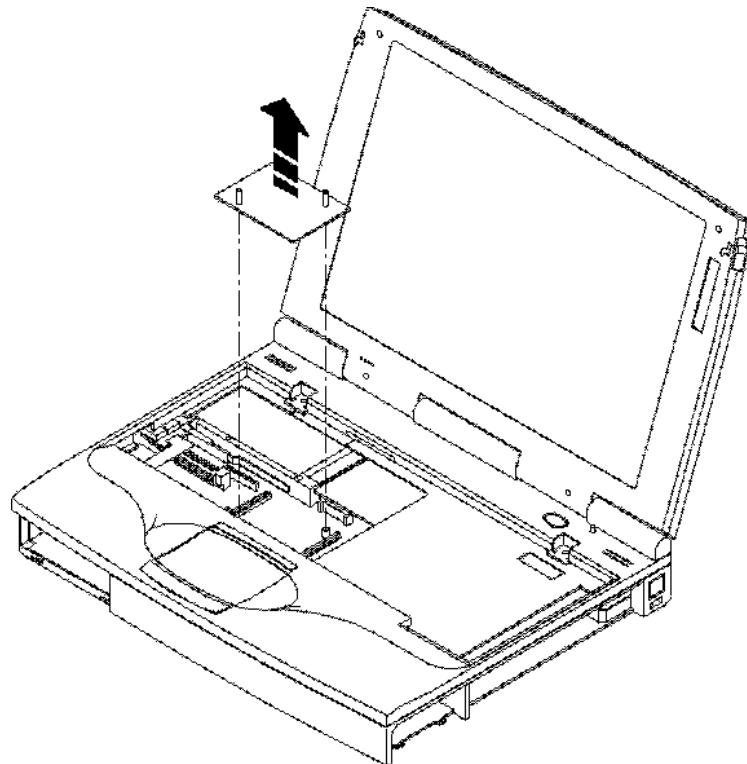
Figure 5-6 Removing the CPU Daughter Card

Removing the LCD Assembly and Keyboard Deck

To remove the LCD Assembly:

1. Remove the Battery (Figure 5-1).

2. Remove the 12X CD/FDD Combination Module or Secondary Battery (Figure 5-2).

3. Remove the Keyboard and Heatsink (Figure 5-4, Figure 5-5).

4. As a part of this procedure you will remove the Keyboard Deck. Before starting, close the LCD Assembly, turn the system unit over, and remove the screw located at the top of battery compartment (Figure 5-9).

5. Open the LCD assembly and remove the left and right end caps by sliding them ¼ inch toward the outside of the system unit and then up (Figure 5-7).

_____ **CAUTION** _____

   The IR receiver/transmitter assembly is located under the right end cap. Care should be taken when removing the right end cap.

_____

6. Remove the center cap and the LCD Assembly from the system unit as follows (Figure 5-8):

   a) Release the front catches of the center cap by pressing in at the front base of the cap. Be careful not to break the catches.

   b) Release the rear catches of the center cap by pressing in at the rear base of the cap. Be careful not to break the catches.

   c) Remove the Center cap.

_____ **Note** _____

   - There are two catches on the back of the center cap that hook on to nibs on the Keyboard Deck. You have to press in on the bottom of the cover to get these catches to release.

   - When replacing the center cap, insert the back first and then secure the front catches.

_____

7. Remove the IR assembly. Gently twist the IR board clockwise to release it from one locking tab. Twist the IR board counter clockwise to release it from the other locking tab.

8. Remove the screw located under the right end cap. The IR receiver/transmitter must be removed to access the screw.

9. Remove the four hinge screws (Figure 5-7).
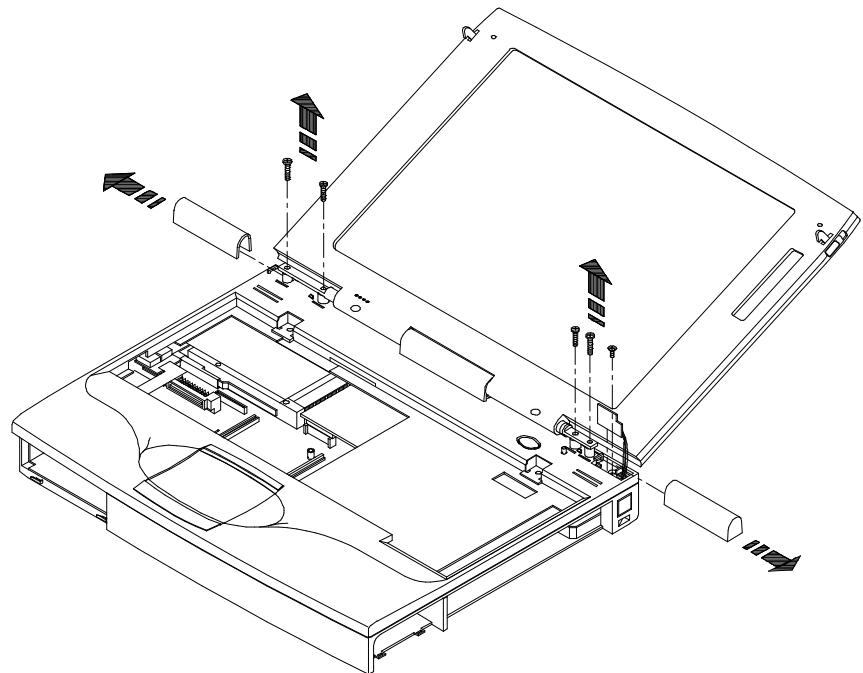
Figure 5-7 Removing LCD Assembly End Caps and Hinge Screws

10. Lift straight up on the LCD assembly to remove it from the system unit. The LCD cable is still attached to the system unit.

11. Lay the panel on the work surface behind the system unit being careful not to damage the cable. To prevent pulling on the LCD panel cable, you should lay the LCD panel on a raised surface such as the CD-ROM/FDD module.

12. Remove the three screws across the back of the Keyboard Deck (Figure 5-8).

13. Remove the screw that secures the Keyboard Deck to the motherboard. This screw is located by the Touch Pad (Figure 5-8).
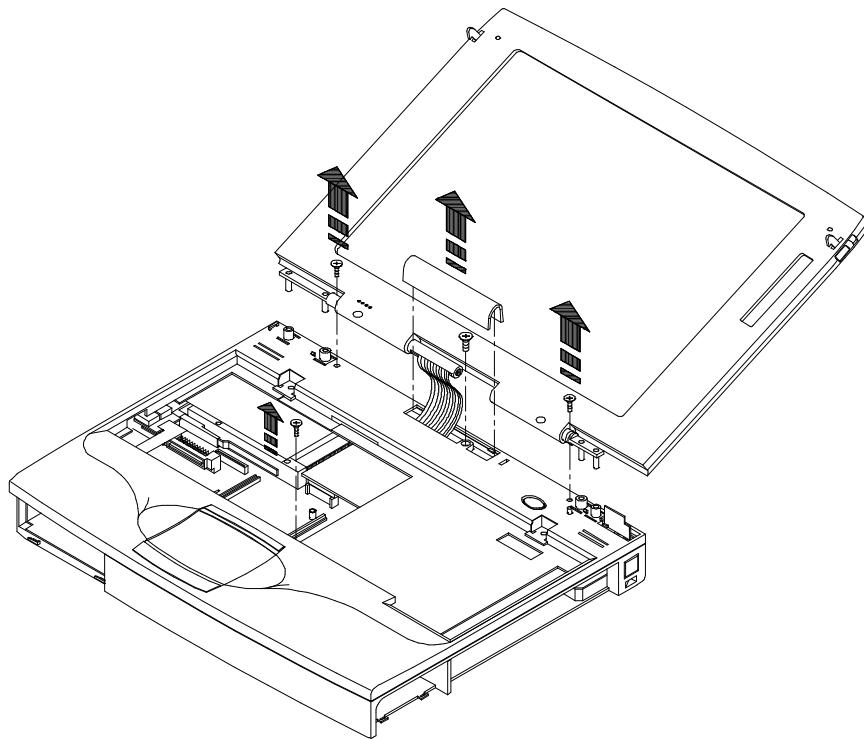
Figure 5-8 Removing the Keyboard Deck (Part 1)

14. Remove the two screws that secure the hard drive and remove the hard drive (Figure 5-8).

15. Make sure you have removed the screw from the underside of the battery compartment (Figure 5-9). Remove the Keyboard Deck by releasing the catches as shown and lift the Keyboard Deck off the system housing. The Touch Pad cable is still connected to the motherboard.

16. Disconnect the Touch Pad cable from the motherboard (Figure 5-9).

17. Lay the Keyboard Deck on the LCD assembly.

_____ **CAUTION** _____

Be careful no to damage the LCD cable assembly.
_____

18. Remove the DC-to-DC Converter Board by pulling it straight up off its connectors. The DC-to-DC converter board partially covers the LCD cable and is located to the right of the PCMCIA slots.

19. Disconnect the cable that goes to the System Suspend/Resume button assembly from the motherboard.

31G—S14
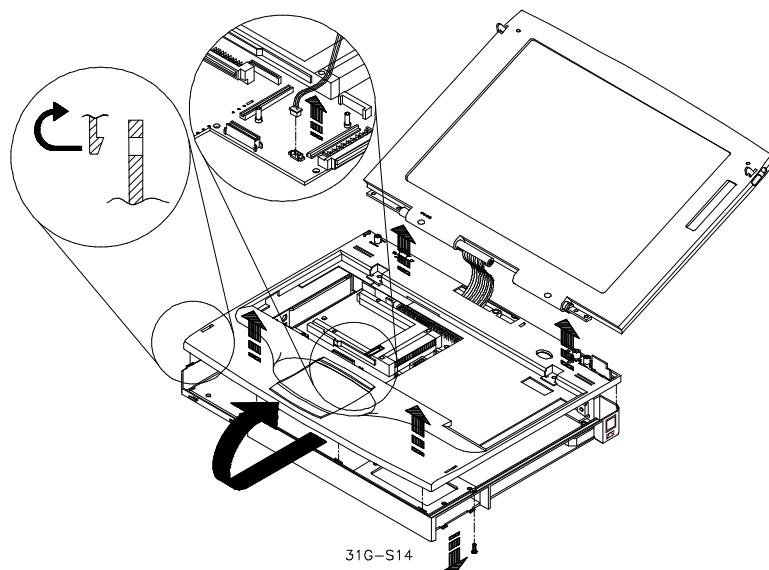
Figure 5-9 Removing the Keyboard Deck (Part 2)

18. Remove the two screws that hold the LCD cable assembly in place. Remove the support bracket. Note: The right screw secures the ground wire (Figure 5-10).

19. Disconnect the LCD cable assembly from the Motherboard by lifting up on the cable connector.

_____ **Note** _____

The metal shield surrounding the cable connector is not a part of the LCD cable assembly.
_____

_____ **Installation Notes**_____

1. Be sure to reconnect the ground wire.
2. When installing the end caps removed in step 6, make sure the nibs inside the end caps slide into the appropriate catch on the Keyboard Deck.
3. The center cap has two catches that slide over nibs on the Keyboard Deck. Install the back first and then the front.

_____
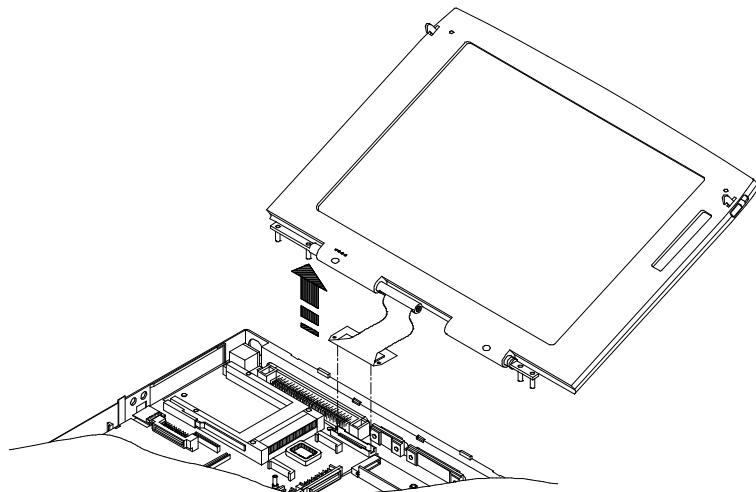
Figure 5-10 Disconnecting the LCD Assembly Cable

Removing the Touch Pad

To remove the Touch Pad:

1. Remove the LCD Assembly and the Keyboard Deck as described in this chapter.

2. Remove the three screws that holds the Touch Pad in place.

3. Remove the Touch Pad by disengaging the three metal catches that hold it in place. You will have to work at carefully releasing these catches.

Removing the DC-to-DC Converter Board

To remove the DC-to-DC Converter board:

1. Remove the LCD Assembly and the Keyboard Deck as described in this chapter.

2. Locate the DC-to-DC Converter board. It is by the PCMCIA card slots at the back of the system unit.

3. Remove the board by pulling it straight up off its connectors.

Removing the System BIOS Chip

The system BIOS chip is located on the motherboard under the DC-to-DC Converter board. To remove the system BIOS chip:

1. Remove the LCD Assembly and the Keyboard Deck as described in this chapter.

2. Locate the DC-to-DC Converter board. It is by the PCMCIA card slots at the back of the system unit.

3. Remove the board by pulling it straight up off its connectors.

4. Using a chip puller, remove the BIOS chip.

_____ **CAUTION** _____

When installing the BIOS chip, make sure pin 1 is properly aligned. Failure to do this will damage the chip, make the system not run, and possibly damage the system.

_____

Removing the Audio Board

To remove the Audio Board:

1. Remove the LCD Assembly and the Keyboard Deck as described in this chapter.

2. Locate the Audio board. It is located over the HDD bay at the front of the system unit.

3. Disconnect the audio cable that goes between the Audio board and the audio jacks.

   a) Release the cable lock by sliding the lock forward out of the connector.

   b) Remove the cable from the connector.

_____ **Note** _____

The Audio jacks are soldered to the motherboard and cannot be removed.
_____

4. Remove the board by pulling it straight up off its connectors.

Removing the Motherboard

1. Remove the Battery (Figure 5-1).

2. Remove the 12X CD/FDD Combination Module or Secondary Battery (Figure 5-2).

3. Remove the HDD Assembly (Figure 5-3).

4. Remove the Keyboard and CPU daughter card (Figure 5-4, Figure 5-5).

5. Remove the LCD Assembly and the Keyboard Deck as described in this chapter.

6. Remove the Audio Board.

_____ **Note** _____

The Audio jacks are soldered to the motherboard and cannot be removed.
_____

7. Remove the eight nuts that secure the I/O ports and Docking connector to the back of the system unit (Figure 5-11).

8. Remove the five screws that secure the motherboard to the system housing (Figure 5-12).

   – Three screws are located across the back of the motherboard.

   – One screw is located in the PCMCIA card slot.

   – One screw is located under the Audio card.

9. Remove the HDD housing.

10. Remove the Motherboard from the system housing.

_____ **Note** _____

1. For the Audio jacks to clear the side of the housing you will have to flex the side of the housing.
2. For the FDD and CD connectors to clear their shields you have to flex the shields out of the way.
_____
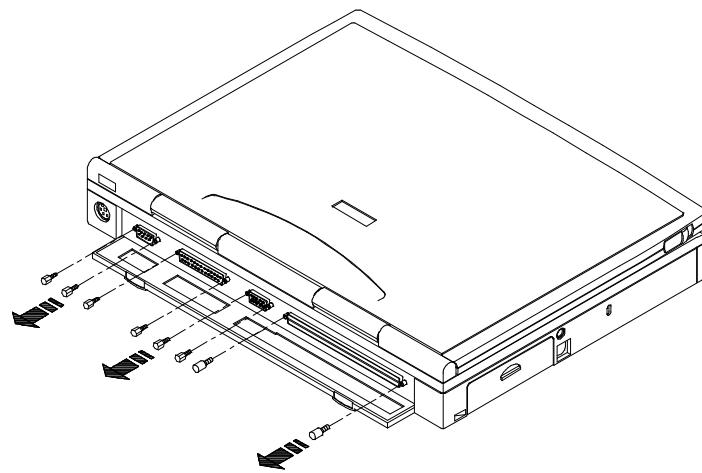
Figure 5-11 Removing I/O Panel Screws
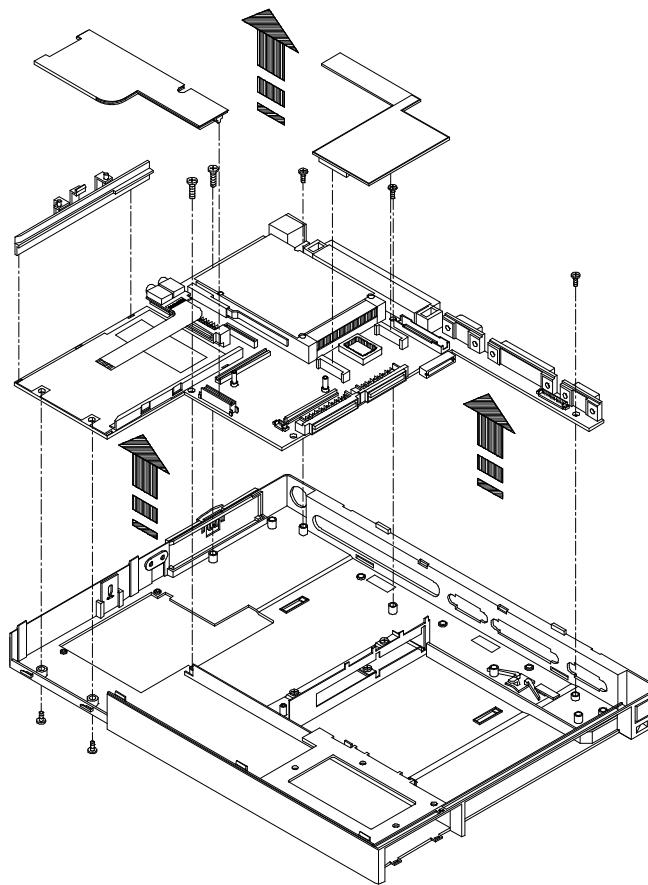
Figure 5-12 Removing the Motherboard

Removing the Power Switch Board

To remove the Power Switch board:

1. Remove the Keyboard, LCD Assembly, and Keyboard Deck as described in this chapter.

2. Locate the Power Switch board. It is attached to the underside of the Keyboard Deck.

3. Remove the two screws that hold the Power Switch board in place.

4. Disconnect the two speaker cables from the Power Switch board

5. Disconnect the IR Receiver/Transmitter cable from the Power Switch board.

Removing the IR Receiver/Transmitter Board

To remove the IR Receiver/Transmitter board:

1. Remove the Keyboard, LCD Assembly, and Keyboard Deck as described in this chapter.

2. Remove the Power Switch board.

3. Remove the IR Receiver/Transmitter board.

Removing the Speakers

To remove the Speakers:

1. Remove the Keyboard, LCD Assembly, and Keyboard Deck as described in this chapter.

2. Disconnect speaker cable(s) from the Power Switch board. You may want to remove the Power Switch board to make this task easier.

3. Remove the two screws that secureeach speaker to the bottom of the Keyboard Deck.

Removing the LCD Display Bezel

To remove the LCD display bezel:

1. Remove the two rubber plugs and two screws (Figure 5-13).

2. Grasping an inside edge of the bezel pull it away from the center of the LCD assembly until the plastic latches are disengaged. Do this on each side of the bezel until you can remove the bezel.
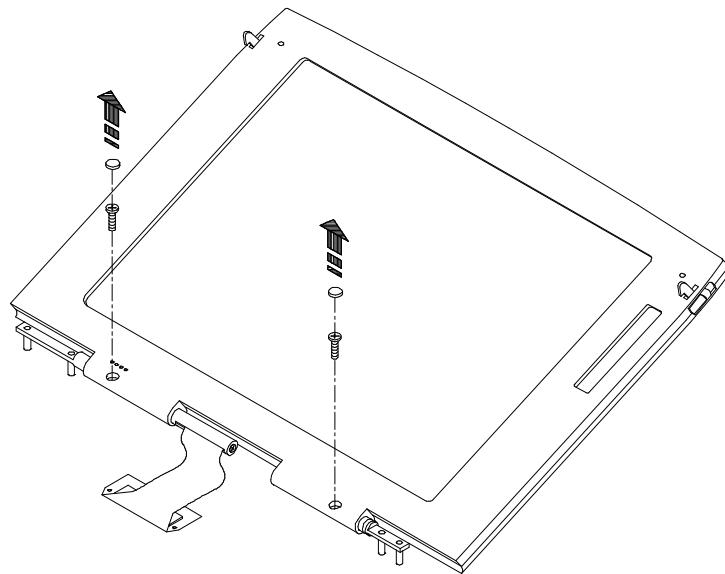
Figure 5-13 Removing the LCD Assembly Bezel

Removing the Status Display/Inverter Board

1. Remove the LCD Display Bezel.

2. Remove the two screws that hold the Status Display/Inverter Board in place (Figure 5-14).

3. Remove the cable that goes to the LCD Panel (A).

4. Remove the flat cable assembly (C).

   a) Release the cable lock by sliding the lock out of the connector.

   b) Remove the cable from the connector.

Removing the LCD Display Panel

1. Remove the LCD Display Bezel.

2. Remove the four screws that hold the LCD Panel in place (Figure 5-14).

3. Disconnect the cable that goes between the Status Display/Inverter Board and the LCD Panel. You may have to remove the Inverter Board.

4. Remove the flat cable assembly (B).

    a) Release the cable lock by sliding the lock out of the connector.

    b) Remove the cable from the connector.

_____**Important**_____

LCD panels used in the Digital HiNote 500 series notebook computer are supplied by different manufacturer's. Each LCD panel uses a unique cable assembly. Do Not mix an LCD panel with a cable assembly from a different manufacturer.

_____
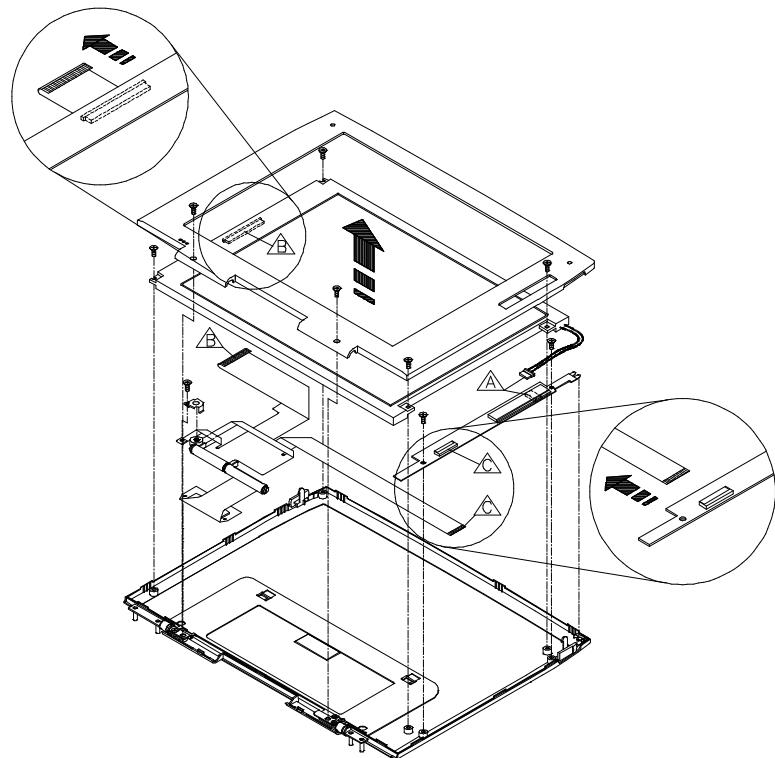
Figure 5-14 Removing the LCD Panel and Status/Inverter Board

6

FRU List and Illustrated Parts Breakdown

This chapter provides a list of the Field Replaceable Units (FRUs) and a parts breakdown and parts list for the Digital HiNote VP 500 series notebook computer.

FRU List

The following sections provide a list of FRUs and their part numbers for the Digital HiNote VP 500 Series notebook computer.

LCD Display Assemblies, Panels, Boards, Housing

Digital FRU P/N	Compal P/N	Description
30-47967-01	2604211A01N	Assy, LCD Display 12.1", GM
30-48058-01		Assy, LCD Display 12.1", GL (LG)
30-48408-01	2604211A11L	Assy, LCD Display 12.1" DSTN (GN2-Sanyo JC53)
30-47974-01	2604221A01T	Assy, LCD Display Bezel, 12.1", GM
30-48409-01	2604221A11Q	Assy, LCD Display Bezel, 12.1", JC53
30-47978-01	2604231A01M	Assy, Housing Display Cover 12.1", GM
30-48059-01	2604231A02L	Assy, Housing Display Cover 12.1", LG
30-48422-01	2604231A11V	Assy, Housing Display Cover 12.1" (GN2-Sanyo JC53)
30-47914-01	2604101A01Q	Assy, Inverter Board, 11.3/12.1"
30-47986-01	2604271A01L	LCD Panel, 12.1" IBM (3.3v ITSV50D)
30-48057-01	2604271A02L	LCD Panel, 12.1" LG
30-48419-01	2604271A03S	LCD Panel, 12.1" Sanyo (DSTN JC53)
30-47944-01	2604351A01Q	Assy, Cable, LCD/INV/MIC, 12.1" GM
30-48060-01	2694351A02N	Assy, Cable, LCD/INV/MIC, 12.1" LG
30-48643-01	2604351A04V	Assy, Cable, LCD/INV/MIC, 12.1" GL2
30-48644-01	2604351A03M	Assy, Cable, LCD/INV/MIC, 12.1" GN2
30-48420-01	DA331G2L204	Cable, LCD FPC for Sanyo,JC53 (w/Connector)
30-47915-01	2604181A01M	Bezel Screw Cap

Motherboards, Daughterboards, Cache, IR, Power

Digital FRU P/N	Compal P/N	Description
30-47913-01	2603971A01N	Assy, DC/DC Converter
30-48417-01	2606021A01R	Assy, PWR SW Board for 31G2
30-48412-01	2604241A12M	Assy, MLB 16MB, GN2/GL2 (-CPU/L2)
30-48022-01	2604291A01V	Assy, L2 Cache Board
30-48416-01	2606011A01M	Assy, IR Board for 31G2
30-47925-01	2604061A02S	CPU Daughter Card 120MHz/Intel
30-47926-01	2604251A01M	CPU Daughter Card 133MHz/Intel
30-48298-01	2608031A01L	CPU Daughter Card 150MHz MMX/Intel
30-48418-01	2604521A02V	CPU Daughter Card 166MHz MMX/Intel
30-48414-01	2603911A11N	Assy, Audio Board (with wave table)
30-48415-01	2603911A12M	Assy, Audio Board (w/o wave table)
30-48640-01	2604591A02U	Assy, MPEG Plate for 31G2

Housings, Heatsinks, Miscellaneous Parts

Digital FRU P/N	Compal P/N	Description
30-47912-01	2604051A01P	Assy, I/O Door
30-47917-01	2603871A01V	Screw Cover, Keyboard Deck, 11.3/12.1"
30-48410-01	2603891A11R	Assy, Deck, Keyboard for 31G2
30-48411-01	2604041A11S	Assy, Housing, Lower Main for 31G2
30-48413-01	2606001A11P	Assy, Heatsink for 31G2
30-48642-01	2603861A03M	Hinge, Cover set w/ IR lens for 31G2
30-47929-01	2604141A01N	Hinge, Support Bracket
30-47930-01	2604151A01T	Assy, Hinge (L/R)
74-51658-01	2604011A01R	Assy, PCMCIA Door
74-51669-01	2604021A01L	Tilt Leg (L/R)
30-47931-01	2604031A01Q	Assy, Memory Door
30-47932-01	2604171A01S	Feet, Rubber
30-47938-01	2604131A01U	Assy, Hook Knob
30-47933-01	2603881A01P	Assy, Speaker L/R

Trackpad

Digital FRU P/N	Compal P/N	Description
30-47934-01	2603931A01Q	Assy, Trackpad
30-47935-01	2603941A01V	Assy, Trackpad Button Board

Batteries

Digital FRU P/N	Compal P/N	Description
30-47939-01	2604191A01R	Battery, RTC, HiNote VP5h
30-48532-01		Spare Main Battery (ENiMH) - 3900mah

Keyboards

Digital FRU P/N	Compal P/N	Description
30-47960-01	2603811A07M	Keyboard, US/American, HiNote VP5h
30-47961-01	2603811A06N	Keyboard, Japanese, HiNote VP5h
30-47962-01	2603811A05Q	Keyboard, UK/British, HiNote VP5h
30-47963-01	2603811A04S	Keyboard, German, HiNote VP5h
30-47964-01	2603811A03U	Keyboard, French, HiNote VP5h
30-47965-01	2603811A02L	Keyboard, Italian, HiNote VP5h
30-47966-01	2603811A01M	Keyboard, Spanish, HiNote VP5h
30-47968-01	2604201A05M	Keyboard, Belgian, HiNote VP5h
30-47969-01	2604201A04N	Keyboard, Danish, HiNote VP5h
30-47970-01	2604201A03Q	Keyboard, Norwegian, HiNote VP5h
30-47971-01	2604201A02S	Keyboard, Swedish/Finnish, HiNote VP5h
30-47972-01	2604201A01U	Keyboard, Portuguese, HiNote VP5h
30-47973-01	2604201A06U	Keyboard, Swiss, HiNote VP5h

Disk Drives

Digital FRU P/N	Compal P/N	Description
30-48296-01	2605821A01M	Combo Module (FDD/CD-ROM)
74-51657-01	2603781A01L	Door, HDD
30-47945-01	2603791A01Q	Assy, HDD Bracket/Cable (w/o HDD)
30-48641-01	2603921A01L	Holder, HDD (L) for 31G2
30-48647-01	2603801A04M	HDD, 1.44Gb, 2.5" x .5" H (Toshiba - MK1401MAV) w/bracket assy
30-48648-01	2603801A03P	HDD, 2.1Gb, 2.5" x .5" H (Toshiba - MK2103MAV) w/bracket assy
30-48649-01	2603801A06U	HDD, 2.1Gb, 2.5" x .5" H (IBM - DTNA-22160) w/bracket assy

Option List

Digital Opt P/N	Digital FRU P/N	Compal P/N	Description
FR-PCP9E-BA	30-47949-01		Mini Dock w/o NIC, PR-1, HiNote VP5h
FR-PCP9E-BB	30-47950-01		Mini Dock w/ NIC, PR-2, HiNote VP5h
FR-PCP9H-BA	30-47922-01		Car Adapter, DC line cord, HiNote VP5h
FR-PCP9H-BE	30-47951-01		Battery Charger, DC line cord, HiNote VP5h
FR-PPC9H-BP	30-48533-01		Spare Main Battery (Li-Ion), HiNote VP 500 II - 4050mah
FR-PCP9H-BN	30-48534-01		OPT Li-Ion Battery, HiNote VP 500 II
FR-PCP9H-BW	30-47980-01	2603831A01M	Intl AC Adapter, w/o AC Cord, HiNote VP5h
	30-47941-01	2603821A01S	AC Adapter Module, Adapter Only, HiNote VP5h
FR-PCP9H-BB	30-47981-01		Intl AC Adapter, US/Amer, AC/DC Cord, HiNote VP5h
FR-PCP9H-BJ	30-47984-01		Intl AC Adapter, Japanese, AC/DC Cord, HiNote VP5h
FR-PCP9H-BH	30-47985-01		Intl AC Adapter, Australian/NZ, AC/DC Cord, HiNote VP5h
FR-PCP9R-BA	30-47954-01	2604301A01M	Removable 1.44Gb HDD Module, HiNote VP5h
FR-PCP9R-BB	30-48535-01		Removable 2.1Gb HDD Module, HiNote VP 500 II
FR-PCP9H-BK	30-48108-01	2604621A01M	External FDD Cable, HiNote VP5h

Illustrated Parts Breakdown

The following sections provide an illustrated parts breakdown of the Digital HiNote VP 500 series notebook computer. Each drawing has one or more tables with a parts description.

System IPBs

Figure 6-1 and Figure 6-3 show the system assembly. Figure 6-2 and Figure 6-4 show the system assembly with part identifiers.
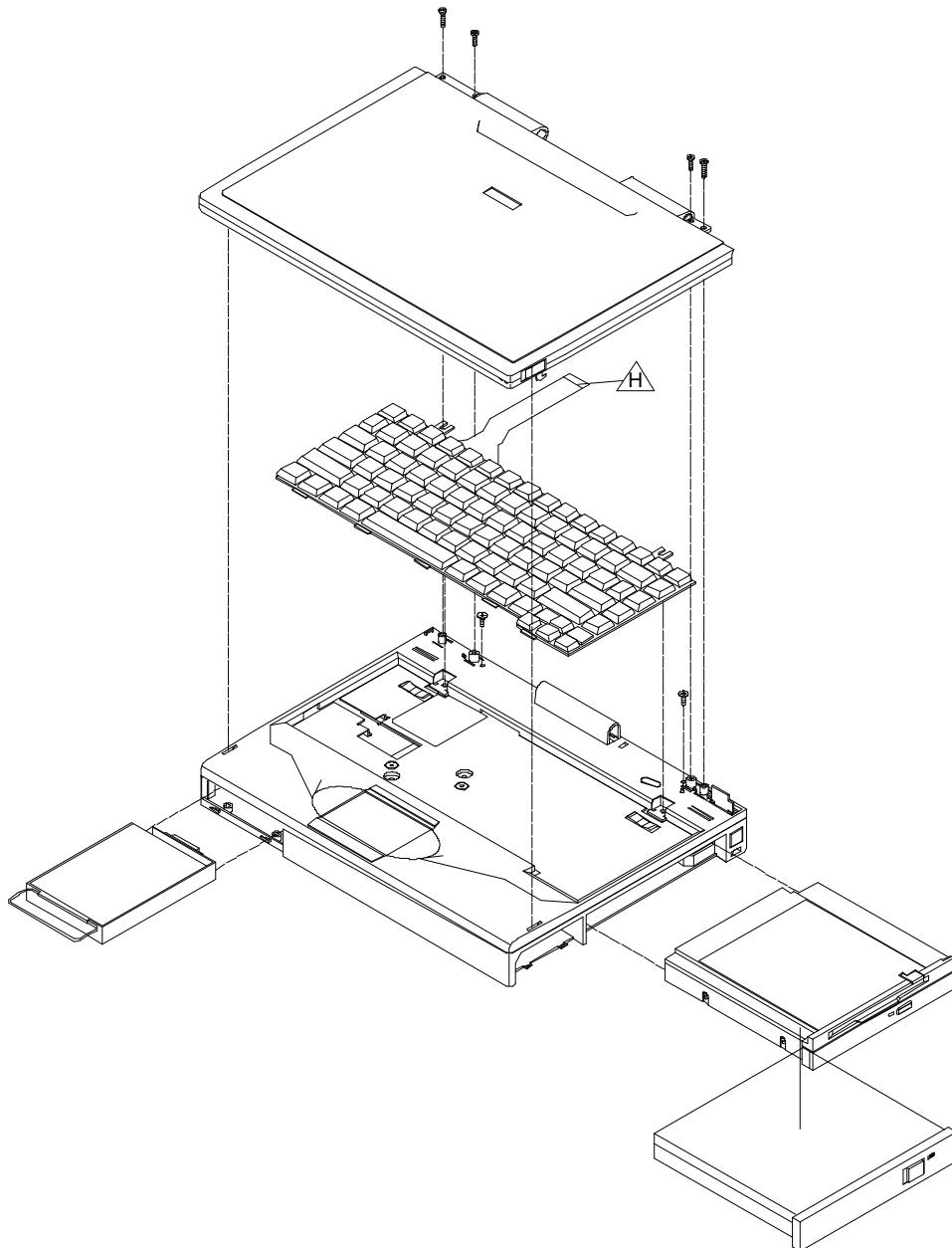

Figure 6-1 System Unit Assembly
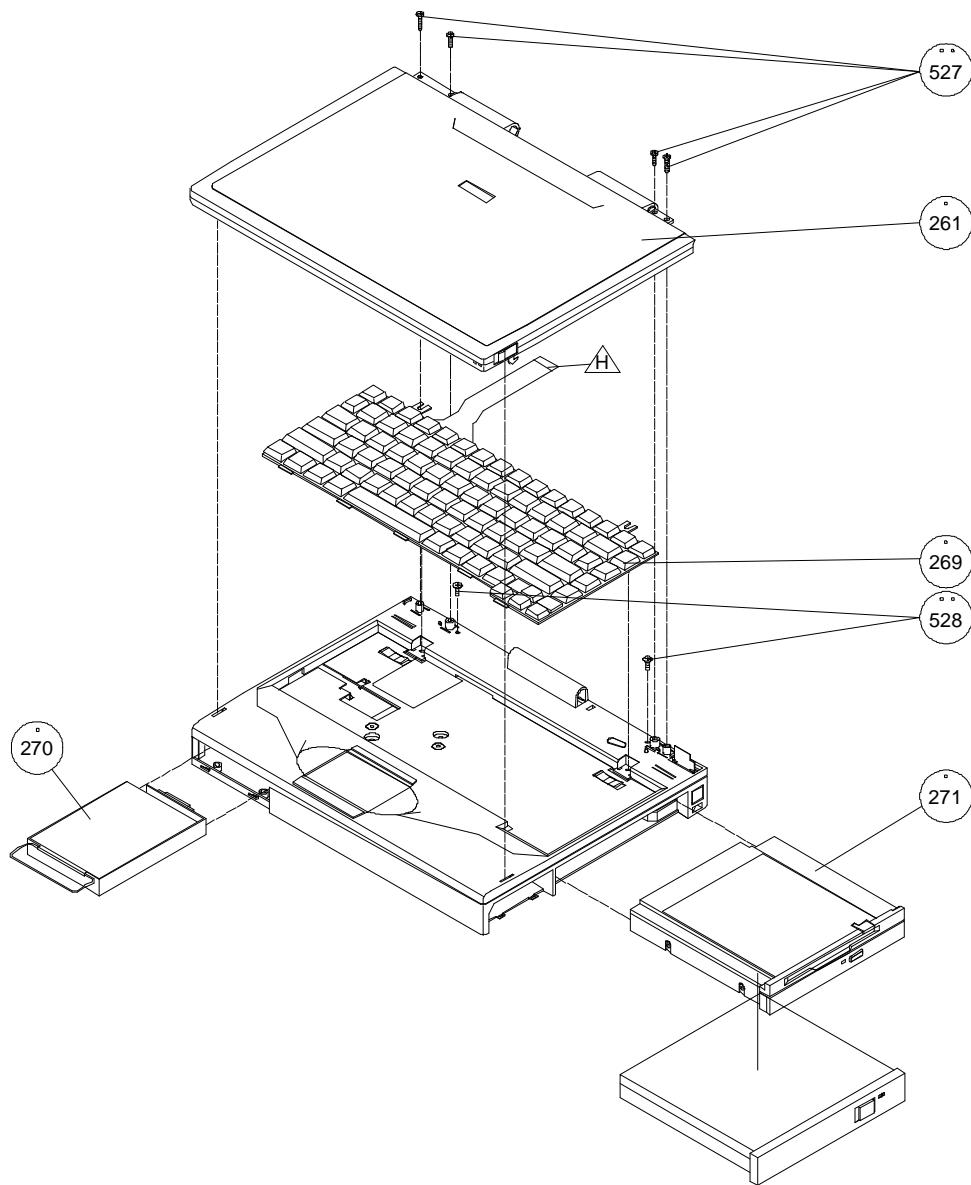
Figure 6-2 System Unit IPB
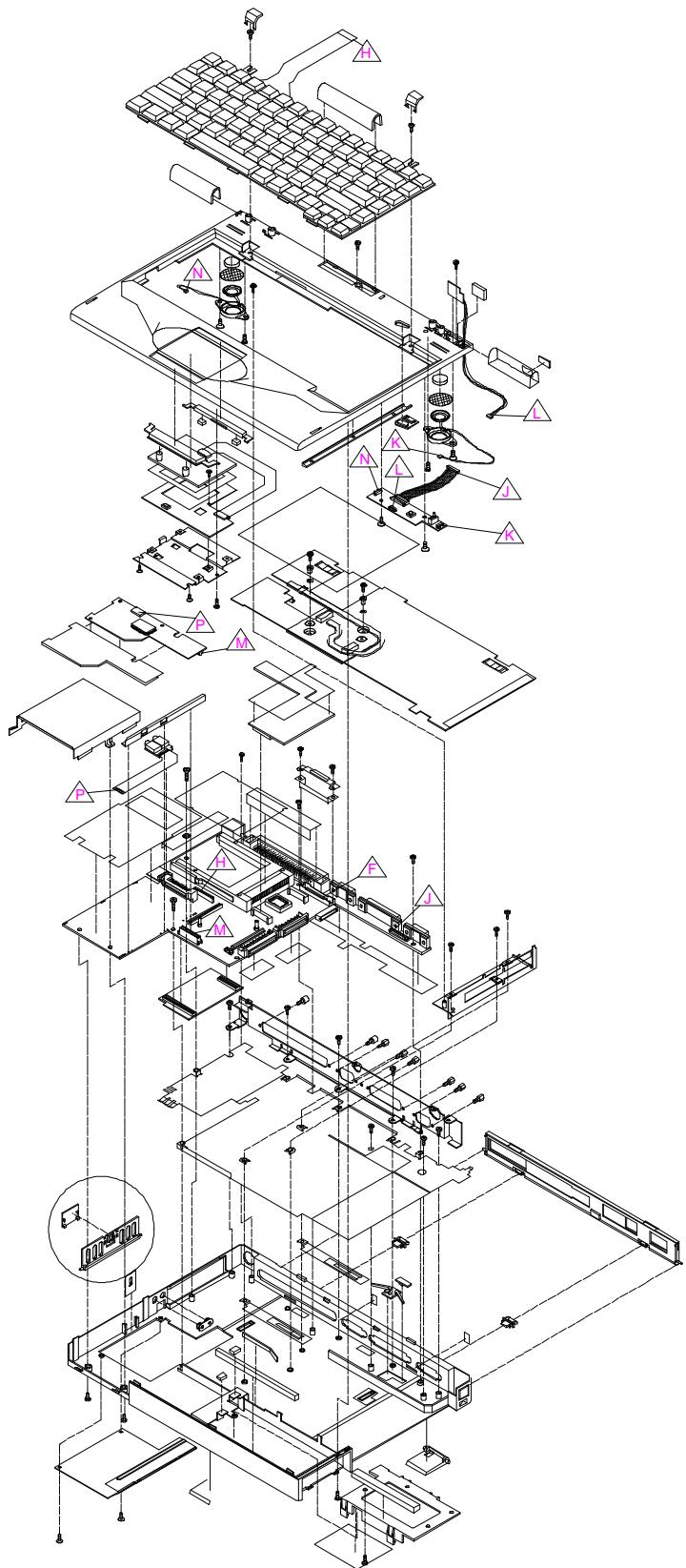
Figure 6-3 Detailed System Assembly TS31GN2/GL2
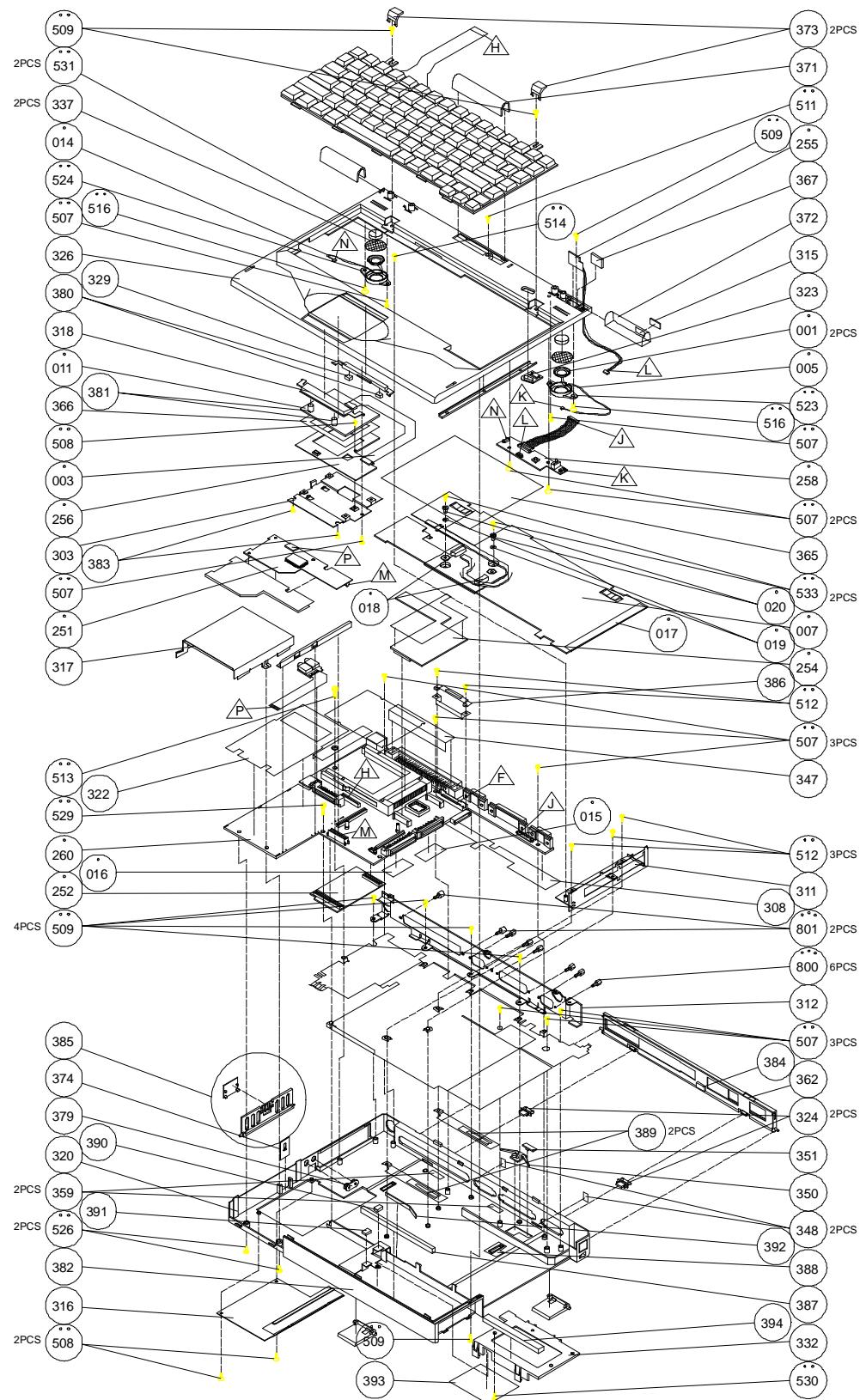
Figure 6-4 Detailed System IPB TS31GN2/GL2

System IPB List for TS31GA/GI

Refer to Figure 6-2 and Figure 6-4.

Ref.	Compal No.	Description	54CB210YYKR	54CB310YYKV
001	CG0P4008003	SPEAKER 0.4W 8 OHM KR-23-8AB (23mm)	2	2
003	DA3S31GL423	FLEXIBLE PCB TS31G LF-194 REV2 T.PAD	1	1
005	DC020102507	HOUSING CONN. SET TS30G SPEAKER-MB RIGHT	1	1
007	EC30G0BJ305	CPU HEAT SINK ASS'Y 30G0BJ REV02	1	1
008	HGTS30P0604	80C51SL BIOS LABEL TS30P SYSTEMSOFT 51SL LABEL	1	1
009	HGTS31A0016	SYSTEM BIOS LABEL TS31A PHOENIX NOTEBIOS LABEL	1	1
* 011	PK090000707	TRACK PAD SYNAPTICS TM1002SU D-GRY	1	1
014	DC020109609	HOUSING CONN. SET TS31G SPK-L WIRESET	1	1
015	EE31G241006	VGA HEAT SINK 31G241 REV01	1	1
016	EE31G242002	MTSC HEAT SINK 31G242 REV01	1	1
251	4551810001V	PCBA, AUDIO BOARD LS-203 TS31G2	1	1
252	4351260001U	SMT ASSY, CACHE BD. LS-146 TS30G	1	1
254	4530980001U	PCBA,DC-DC CONVERTER PQ-33C TS31G2	1	1
255	4552200001R	PCBA, F.I.R LS-207 TS31G2	1	1
256	4551790001M	PCBA, TRACK PAD LS-192 TS31G	1	1
258	4551830001U	PCBA, POWER SW BD. LS-201 TS31G2	1	1
260	4610640001S	CPCBA, W/FIRMWARE LA201 TS31G2	1	1
261	5103450021L	LCD ASSY TS31GA (WG013)	1	-
261	5103450031T	LCD ASSY TS31GI (WG013)	-	1
262	5103460001L	FDD MODULE TS31G (WG013)	1	1
266	X661090002T	MECHANICAL ASSY TS31G (WG013)	1	1
267	X660790001M	SCREW SET REAL PANEL SCREW	1	1
269	24CB21	K/B SET 30G		
270	510283	HDD BRACKET ASSY TS30G		
* 271	5103660003P	FDD/CD ROM 12X MODU TS31G2 (WG013)	1	1

System IPB List for TS31GN2

Refer to Figure 6-2 and Figure 6-4.

			54CB220YXXXX		54CB230YXXXX	
Ref.	Compal No.	Description	YYKL	Y9KM	YYKQ	Y9KS
001	CG0P4008003	SPEAKER 0.4W 8 OHM KR-23-8AB (23mm)	2	2	2	2
003	DA3S31GL423	FLEXIBLE PCB TS31G LF-194 REV2 T.PAD	1	1	1	1
005	DC020102507	HOUSING CONN. SET TS30G SPEAKER-MB RIGHT	1	1	1	1
007	EC30G221101	CPU HEAT SINK ASS'Y 30G221 REV01 (FOR 30G2)	1	1	1	1
008	HGTS30P0604	80C51SL BIOS LABEL TS30P SYSTEMSOFT 51SL LABEL	1	1	1	1
009	HGTS31A0016	SYSTEM BIOS LABEL TS31A PHOENIX NOTEBIOS LABEL	1	1	1	1
011	PK090000707	TRACK PAD SYNAPTICS TM1002SU D-GRY	1	1	1	1
014	DC020109609	HOUSING CONN. SET TS31G SPK-L WIRESET	1	1	1	1
015	EE31G241006	VGA HEAT SINK 31G241 REV01	1	1	1	1
016	EE31G242002	MTSC HEAT SINK 31G242 REV01	1	1	1	1
017	EL31G252004	CPU-HEATSINK MYLAR 31G252 REV01	1	1	1	1
018	FH31G246005	RUBBER FOR CPU-BOARD 31G246 REV01	2	2	2	2
019	FH31G247001	RUBBER WASHER 31G247 REV01	2	2	2	2
020	LC31G245003	SOCKET 31G245 REV01	2	2	2	2
251	4551810011S	PCBA, AUDIO BOARD LS-203 TS31G2(W/O W.T.)	1	1	1	1
252	4351260001U	SMT ASSY, CACHE BD. LS-146 TS30G	-	-	1	1
254	4530980001U	PCBA,DC-DC CONVERTER PQ-33C TS31G2	1	1	1	1
255	4552200001R	PCBA, F.I.R LS-207 TS31G2	1	1	1	1
256	4551790001M	PCBA, TRACK PAD LS-192 TS31G	1	1	1	1
258	4551830001U	PCBA, POWER SW BD. LS-201 TS31G2	1	1	1	1
260	4610640041R	CPCBA, W/FIRMWARE LA201 TS31G2 (US) STN	1	-	1	-
260	4610640042P	CPCBA, W/FIRMWARE LA-201 TS31G2 (UK) STN	-	1	-	1
261	5103450071S	LCD ASSY TS31GN2 (WG013)	1	1	1	1

Ref.	Compal No.	Description	54CB220YXXXX		54CB230YXXXX	
			YYKL	Y9KM	YYKQ	Y9KS
266	X661270001T	MECHANICAL ASSY TS31G2 (WG013)	1	1	1	1
267	X660790001M	SCREW SET REAL PANEL SCREW	1	1	1	1
269	24CB21	K/B SET 30G				
270	510283	HDD BRACKET ASSY TS30G				
271	5103660003P	FDD/CD ROM 12X MODU TS31G2 (WG013)	1	-	1	-

System IPB List for TS31GL2

Refer to Figure 6-2 and Figure 6-4.

Ref.	Compal No.	Description	54CB320YXXX			54CB330YXXX		
			YYKP	Y9KR	YWKU	YYKU	Y9KL	YWKN
001	CG0P4008003	SPEAKER 0.4W 8 OHM KR-23-8AB (23mm)	2	2	2	2	2	2
003	DA3S31GL423	FLEXIBLE PCB TS31G LF-194 REV2 T.PAD	1	1	1	1	1	1
005	DC020102507	HOUSING CONN. SET TS30G SPEAKER-MB RIGHT	1	1	1	1	1	1
007	EC30G221101	CPU HEAT SINK ASS'Y 30G221 REV01 (FOR 30G2)	1	1	1	1	1	1
008	HGTS30P0604	80C51SL BIOS LABE TS30P SYSTEMSOFT 51SL LABEL L	1	1	1	1	1	1
009	HGTS31A0016	SYSTEM BIOS LABEL TS31A PHOENIX NOTEBIOS LABEL	1	1	1	1	1	1
011	PK090000707	TRACK PAD SYNAPTICS TM1002SU D-GRY	1	1	1	1	1	1
014	DC020109609	HOUSING CONN. SET TS31G SPK-L WIRESET	1	1	1	1	1	1
015	EE31G241006	VGA HEAT SINK 31G241 REV01	1	1	1	1	1	1
016	EE31G242002	MTSC HEAT SINK 31G242 REV01	1	1	1	1	1	1
017	EL31G252004	CPU-HEATSINK MYLAR 31G252 REV01	1	1	1	1	1	1
018	FH31G246005	RUBBER FOR CPU-BOARD 31G246 REV01	2	2	2	2	2	2
019	FH31G247001	RUBBER WASHER 31G247 REV01	2	2	2	2	2	2
020	LC31G245003	SOCKET 31G245 REV01	2	2	2	2	2	2

Ref.	Compal No.	Description	54CB320YXXX			54CB330YXXX		
			YYKP	Y9KR	YWKU	YYKU	Y9KL	YWKN
251	4551810011S	PCBA, AUDIO BOARD LS-203 TS31G2(W/O W.T.)	1	1	1	-	-	-
251	4551810001V	PCBA, AUDIO BOARD LS-203 TS31G2	-	-	-	1	1	1
252	4351260001U	SMT ASSY, CACHE BD. LS-146 TS30G	1	1	1	1	1	1
254	4530980001U	PCBA,DC-DC CONVERTER PQ-33C TS31G2	1	1	1	1	1	1
255	4552200001R	PCBA, F.I.R LS-207 TS31G2	1	1	1	1	1	1
256	4551790001M	PCBA, TRACK PAD LS-192 TS31G	1	1	1	1	1	1
258	4551830001U	PCBA, POWER SW BD. LS-201 TS31G2	1	1	1	1	1	1
260	4610640001S	CPCBA, W/FIRMWARE LA201 TS31G2	1	-	-	1	-	-
260	4610640002Q	CPCBA, W/FIRMWARE LA-201 TS31G2 (UK)	-	1	-	-	1	-
260	4610640003N	CPCBA, W/FIRMWARE LA-201 TS31G2 (JP)	-	-	1	-	-	1
261	5103450061V	LCD ASSY TS31GL2 (WG013)	1	1	1	1	1	1
266	X661270001T	MECHANICAL ASSY TS31G2 (WG013)	1	1	1	1	-	1
267	X660790001M	SCREW SET REAL PANEL SCREW	1	1	1	1	1	1
269	24CB21	K/B SET 30G						
270	510283	HDD BRACKET ASSY TS30G						
271	5103660003P	FDD/CD ROM 12X MODU TS31G2 (WG013)	1	-	-	1	-	-

Mechanical Parts List TS31G - All Units

Refer to Figure 6-2 and Figure 6-4.

Ref.	Compal No.	Description	Qty
303	EC31G037001	TRACK PAD BRACKET31G037 REV01	1
308	EL30G08H102	I/O MYLAR 30G08H REV01	1
311	EC31G04R007	RELEASE MODULE 31G04R REV01	1
312	EC31G021008	I.O BRACKET 31G021 REV01	1
315	FC31G04B107	IR LENS 1 31G04B REV01	1
316	FC31G03G002	RAM COVER 31G03G REV01 WG013(DECK269)	1
317	EC31G03S105	HDD-HOLD L 1 31G03S REV01	1
318	FB31G041000	TRACK PAD KONB(D) 31G041 REV01 (WG015)(DECK271)	1
320	FA31G215000	LOGIC-LOWER 31G215 REV01 (WG013)	1
322	EL30G0CW104	HDD PVC MYLAR 30G0CW REV01	1
323	FB31G043002	POWER KONB 31G043 REV01 (WG015)(DECK271)	1
324	FC31G04J009	I/O DOOR HINGE 31G04J REV01 WG013(DECK269)	2
326	FA31G214003	LOGIC-UPPER 31G214 REV01 (WG014)	1
329	FB31G042006	TRACK PAD KONB(H) 31G042 REV01 (WG015)(DECK271)	1
332	FC31G249009	MPEG PLATE 1 31G249 REV01 (FOR EMI)	1
337	FH30G0BQ108	NON-WOVEN (SPEAKER) 30G0BQ REV01	2
347	EL30G0C7108	DOCKING MYLAR 30G0C7 REV01	1
348	LC1031D0607	AUDIO GASKET 5X5X5	2
350	FB31G04L006	LOCK KNOB 31G04L REV01 WG013(DECK269)	1
351	FB31G04M002	MODULE LOCK KNOB 31G04M REV01 WG013(DECK269)	1
359	FH30G0C8105	I/O SPONGE 30G0C8 REV01	2
362	FC31G03P009	I/O DOOR ASS'Y 31G03P REV01 (WG013)(DEC269)	1
366	EL30G08N109	TRACK PAD MYLAR 30G08N REV01	1
367	FH31G04X002	SPONG (IR) 31G04X REV01	1
371	FC31G036102	HI-CEN-CAP (FOR EMI) 31G036 REV01	1
372	FC31G034002	HINGE COVER(R) 31G034 REV01 (WG013)(DECK269	1
373	FC31G044008	SCREW COVER 31G044 REV01 (WG014)(DECK270)	2
374	EC31G038008	LOCK BRACKET 31G038 REV01 (KENSINGITON)	1
380	FH31G04U008	TRACKPAD SPONG 1 31G04U REV01	2
381	FH31G04T005	TRACKPAD SPONG 2 31G04T REV01	2
382	EC31G03Q102	SUPPORT-BRACKET 1 31G03Q1 REV01	1
383	MAB10025304	SCREW TPB-2.0X4FP-ZK	2
384	FH31G04Z000	IO-DOOR RUBBER 31G04Z REV01	1
385	FC31G082007	PCMCIA-DOOR ASS'Y 31G047 REV01	1
386	EC31G04S003	FPC-CONN-HOLD 31G04S REV01	1
387	EL31G08Y007	MYLAR FOR BATTERY 30G08Y REV01	1

Ref.	Compal No.	Description	Qty
388	EL30G24H100	MODULE COVER MYLAR 30G24H REV01	1
389	EC30G24K102	GROUND FINGER 30G24K REV01 (FOR CD ROM)	1
390	FH31G24A007	SPONG(6X5X3.0) 31G24A REV01	1
391	FH31G24B004	SPONG(6X5X2.0) 31G24B REV01	1
392	EL31G24C007	PRESSURE PANEL 31G24C REV01	1
393	EL31G24D001	TEFLON (56X45) 31G24D REV01	1
394	FH30G24J108	EMI SHIELDING GASKET 30G24J REV01	1

			Qty	
Ref.	Compal No.	Description	001	002
507	MAAA0001406	SCREW M3.0X0.5+5FP-MC	11	11
508	MAAA0002305	SCREW M2X0.4+3FP-ZK	3	3
509	MAAA0003409	SCREW M3X0.5+3FP-MC	8	8
511	MAAA0303208	SCREW M3X0.5+5FP-MC	1	1
512	MAA10023402	SCREW M2X0.4+3F-ZK	5	5
513	MAAA0003301	SCREW M3X0.5+5FP-ZK	1	1
* 514	MAA10005307	SCREW M2X0.4+8F-ZK	1	1
* 515				
516	MAB10024006	TAPING SCREW TPB-2.0+5F-NI	2	2
523	FC31G08G000	SPEAKER HOLD(R) 31G08G REV01	1	1
524	FC31G08H003	SPEAKER HOLD(L) 31G08H REV01	1	1
* 526	MAAA0006301	SCREW M2X0.4+10FP-ZK	4	2
527	MAA20098201	SCREW TPB-M3X14.5P-NI	4	4
528	MAA10026401	SCREW M2.6X0.45+6F-ZK	2	2
529	MACA0308409	SCREW M3X0.5+8FP-NI	1	1
530	MAAA0006203	SCREW M3X0.5+4F-ZK	1	1
531	FH31G08N005	SPEAKER HOLD SPONGE 31G08N REV01	2	2
* 533	MAAA0006408	SCREW (NL) M2X0.4+10FP-ZK (NL)	-	2

LCD Assembly IPB for TS31GM/L

Figure 6-5 shows the LCD assembly. Figure 6-6 shows the LCD assembly with part identifiers.
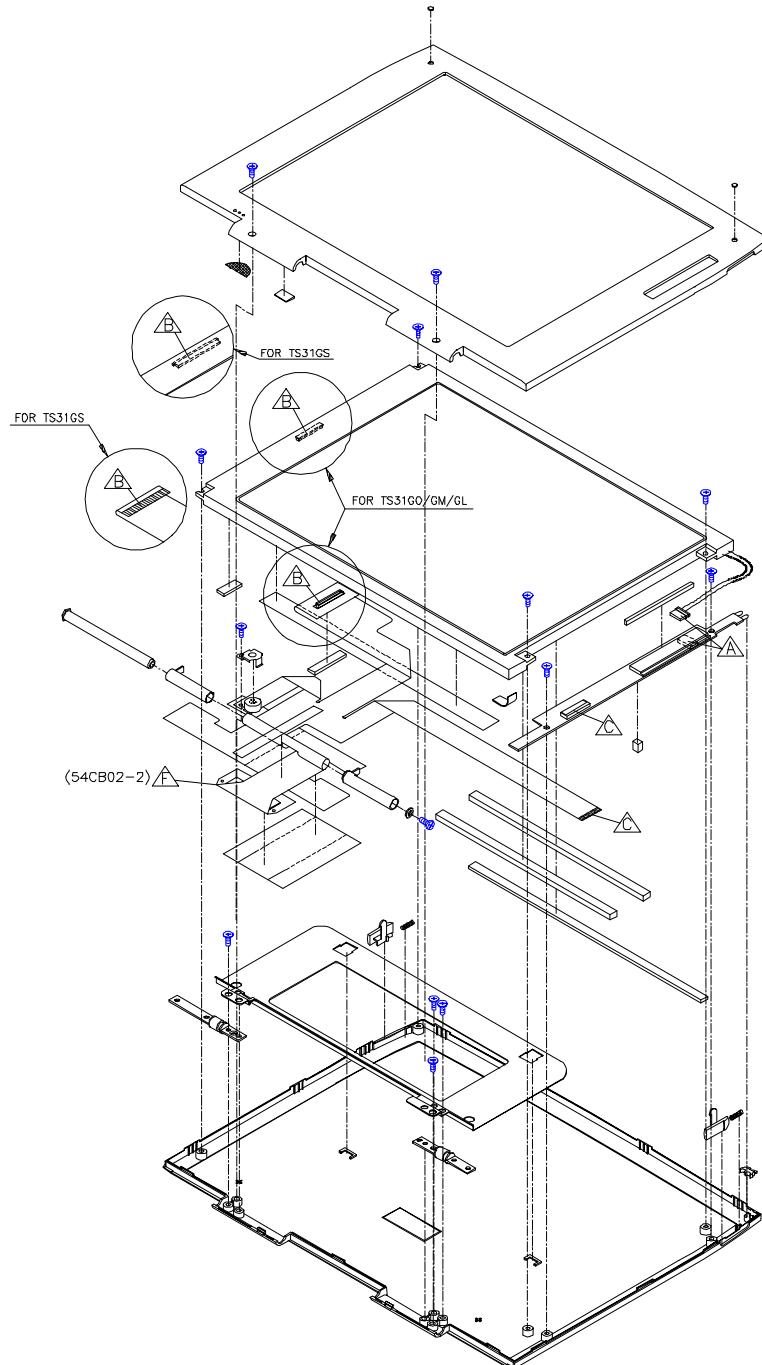

Figure 6-5 LCD Assembly for GM/GL Panel
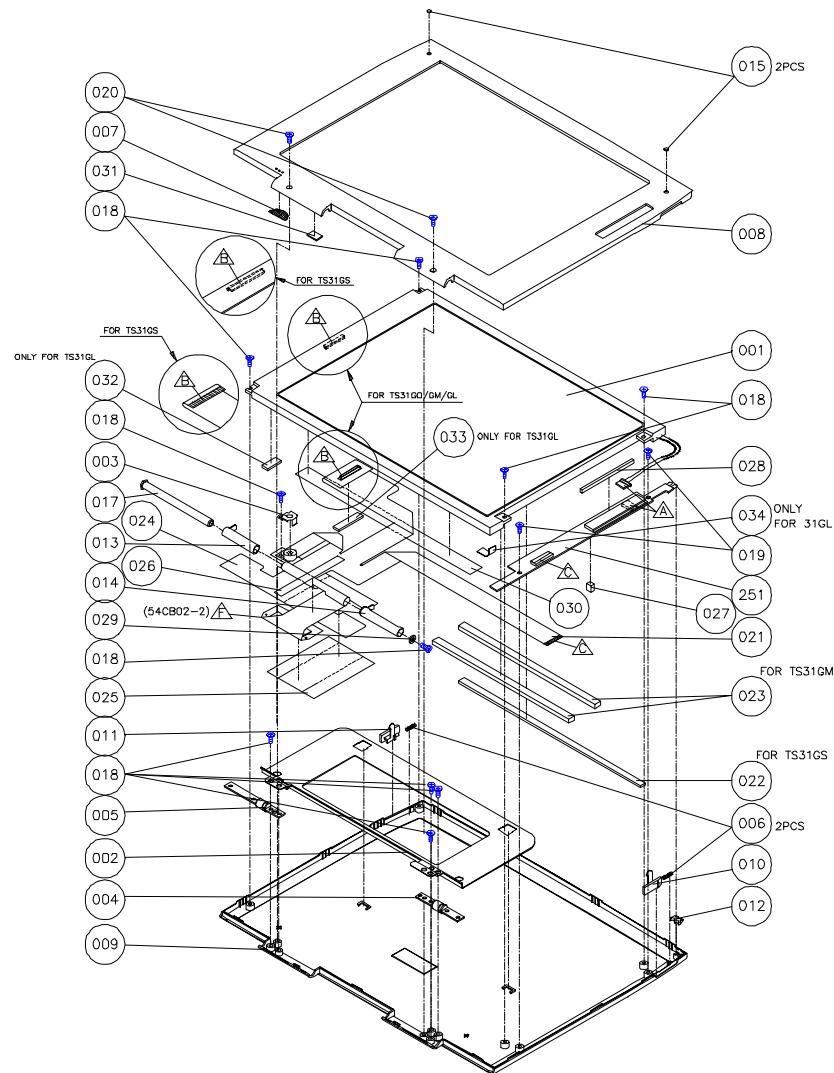
Figure 6-6 LCD Assembly IPB for GM/GL Panel

LCD Assembly Listing for TS31GM/L

Refer to Figure 6-6.

Ref.	Compal Number	Description
* 001	AC600003806	LCD MODULE ITSV50D 12.1" (IBM)
* 001		LCD MODULE (LG)
002	EC31G039101	HINGE SUPPORT 31G039 REV01 (BRACKET)
003	EC31G04C003	MIC HOLDER 31G04C REV01
004	EC31G04F004	HINGE(R) 31G04E REV01
005	EC31G04E001	HINGE(L) 31G04F REV01
006	EF31G04Q008	SPRING 31G04Q REV01
007	EFTS387E007	HIMELON (SPEAKER) TS387E REV01
008	FA31G012001	LCD-BEZEL(12.1") 31G012 REV01
009	FA31G011005	LCD-COVER 31G011 REV01 (WG013)(DECK269)
009	FA31G011307	LCD-COVER 31G011 REV01 (IBM 12.1)
010	FB31G045005	HOOK KNOB(R) 31G045 REV01 (WG013)(DECK269)
011	FB31G046001	HOOK KNOB(L) 31G046 REV01 (WG013)(DECK269)
012	FC31G04A002	LED LENS 31G04A REV01
013	FC31G04G008	FPC HOLDER(L) 31G04G REV01
014	FC31G04H001	FPC HOLDER (R) 31G04H REV01
015	FH31D049103	RUBBER PAD 31D049 REV01
017	LC31G04I005	FPC HOLDER SCREW 31G04I REV01 (NUT)
018	MAAA0001406	SCREW M3.0X0.5+5FP-MC
019	MACA0000404	SCREW M3X0.5+5FP-MC
020	MAAA0005304	SCREW M3X0.5+8FP-MC(NL)
021		FLEXIBLE PCB
251	4530950001Q	PCBA, INVERTER PQ-33B TS31G

LCD Assembly IPB for TS31GA/I

Figure 6-7 shows the LCD assembly. Figure 6-8 shows the LCD assembly with part identifiers.
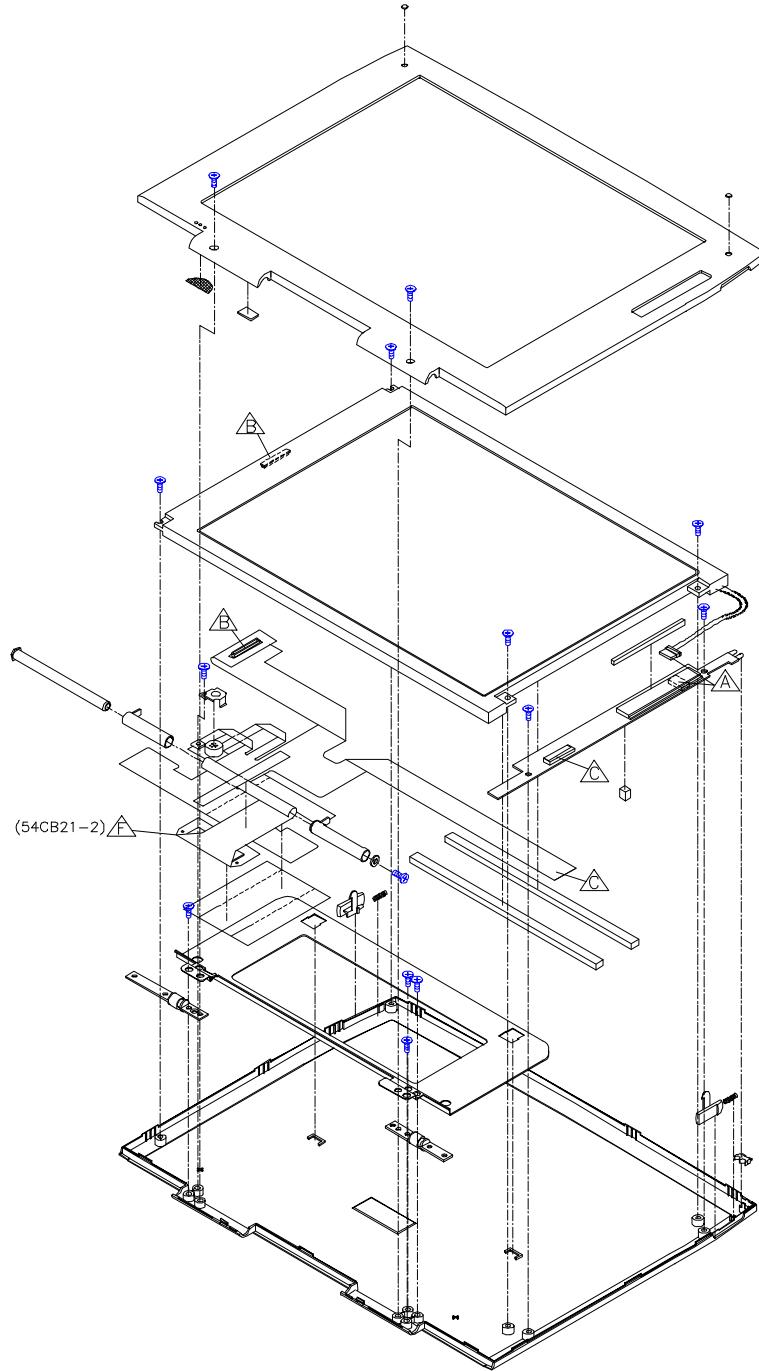
Figure 6-7 LCD Assembly for GS/GO Panel
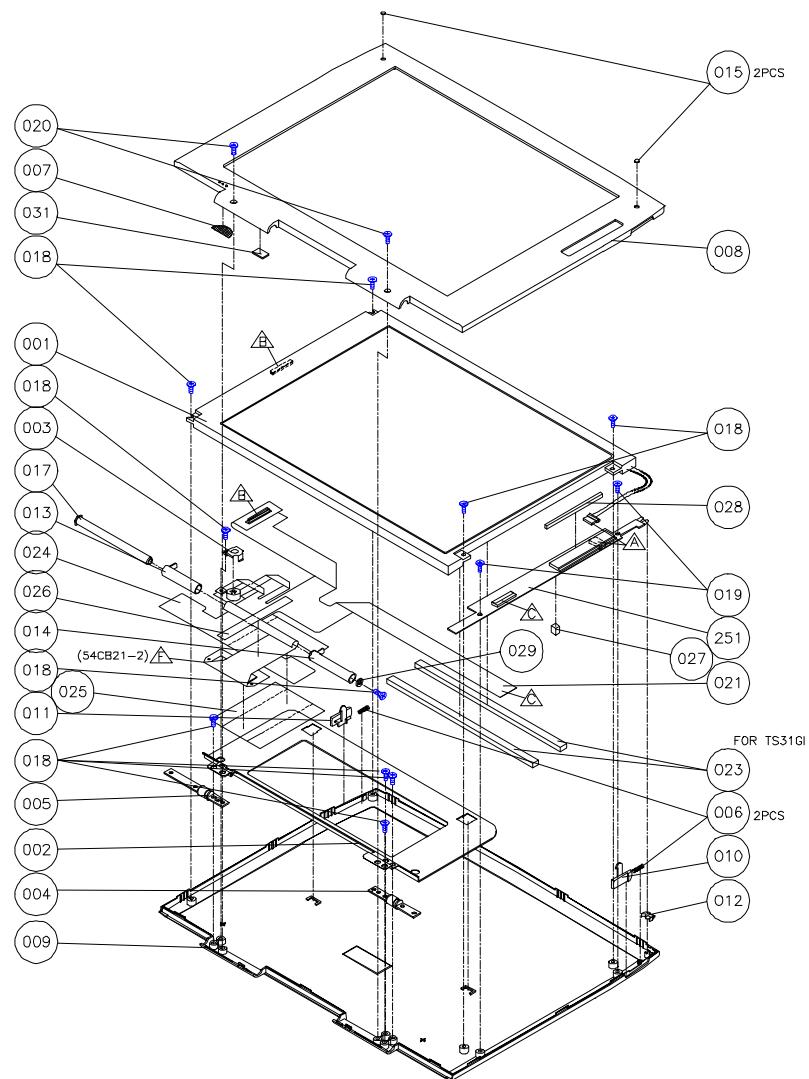
Figure 6-8 LCD Assembly IPB for GA/GI Panel

LCD Assembly Listing for TS31GA/I

Refer to Figure 6-7.

Ref.	Compal Number	Description
001	AC600004306	LCD MODULE DSTN JC35 (SANYO)
002	EC31G039101	HINGE SUPPORT 31G039 REV01 (BRACKET)
003	EC31G04C003	MIC HOLDER 31G04C REV01
004	EC31G04F004	HINGE(R) 31G04E REV01
005	EC31G04E001	HINGE(L) 31G04F REV01
006	EF31G04Q008	SPRING 31G04Q REV01
007	EFTS387E007	HIMELON (SPEAKER) TS387E REV01
008	FA31G012001	LCD-BEZEL(12.1") 31G012 REV01
009	FA31G011005	LCD-COVER 31G011 REV01 (WG013)(DECK269)
010	FB31G045005	HOOK KNOB(R) 31G045 REV01 (WG013)(DECK269)
011	FB31G046001	HOOK KNOB(L) 31G046 REV01 (WG013)(DECK269)
012	FC31G04A002	LED LENS 31G04A REV01
013	FC31G04G008	FPC HOLDER(L) 31G04G REV01
014	FC31G04H001	FPC HOLDER (R) 31G04H REV01
015	FH31D049103	RUBBER PAD 31D049 REV01
017	LC31G04I005	FPC HOLDER SCREW 31G04I REV01 (NUT)
018	MAAA0001406	SCREW M3.0X0.5+5FP-MC
019	MACA0000404	SCREW M3X0.5+5FP-MC
020	MAAA0005304	SCREW M3X0.5+8FP-MC(NL)
021	DA331G2L107	FLEXIBLE PCB
251	4530950001Q	PCBA, INVERTER PQ-33B TS31G

A
Specifications

Base Unit

Feature	Model			
	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT	VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT
CPU	P54 CSLM Pentium (120 MHz to 10 MHz supported	P54 CSLM Pentium (120 MHz to 10 MHz supported	P54 CSLM Pentium (120 MHz to 10 MHz supported	P55 Pentium MMX (133 MHz to 166 MHz supported
CPU Speed	120 MHz	133 MHz	150 MHz	166 MHz
Cache L1	16KB Internal	16KB Internal	16KB Internal	32KB Internal
Cache L2	N/A	256KB on daughter card	256KB on daughter card	256KB on daughter card
Architecture (Mobile Triton)	PCI	PCI	PCI	PCI
Standard RAM	16MB (EDO)	16MB (EDO)	16MB (EDO)	16MB (EDO)
Maximum RAM	80MB	80MB	80MB	80MB
RAM Upgrade	Dual DIMM	Dual DIMM	Dual DIMM	Dual DIMM
PC95A Compliant	Yes	Yes	Yes	Yes
Diskette and CD-ROM Combo drive	3.5" floppy 12X CD-ROM 250ms access 1500Kbps transfer rate	3.5" floppy 12X CD-ROM 250ms access 1500Kbps transfer rate	3.5" floppy 12X CD-ROM 250ms access 1500Kbps transfer rate	3.5" floppy 12X CD-ROM 250ms access 1500Kbps transfer rate
Diskette supports Japanese Mode	Yes	Yes	Yes	Yes
HDD Size	2.5" 12.5mm height	2.5" 12.5mm height	2.5" 12.5mm height	2.5" 12.5mm height
HDD (user upgradable)	1.08GB	1.08GB	1.44GB	2.1GB
Integrated Pointing Device	Trackpad	Trackpad	Trackpad	Trackpad

Ports

	Model			
Port	**VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT**	**VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT**
Keyboard/Mouse Port	PS/2	PS/2	PS/2	PS/2
External Video Interface	SVGA	SVGA	SVGA	SVGA
External Video, Maximum Resolution	1024x768 256 Colors	1024x768 256 Colors	1024x768 256 Colors	1024x768 256 Colors
External Video, Refresh in simultaneous mode	60 Hz	60 Hz	60 Hz	60 Hz
Serial Port	Yes	Yes	Yes	Yes
Parallel Port	ECP/EPP	ECP/EPP	ECP/EPP	ECP/EPP
Serial IR link	Fast IR	Fast IR	Fast IR	Fast IR
Microphone Jack	Yes	Yes	Yes	Yes

Audio

	Model			
Feature	**VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT**	**VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT**
Audio	16-bit Stereo	16-bit Stereo	16-bit Stereo	16-bit Stereo
Audio Controller	ESS 1878	ESS 1878	ESS 1878	ESS 1878
Audio Compatibility	WSS and SoundBlaster with OPL3 Compatibility	WSS and SoundBlaster with OPL3 Compatibility	WSS and SoundBlaster with OPL3 Compatibility	Wave table, WSS and SoundBlaster with OPL3 Compatibility
Audio Volume Control	Hot Key	Hot Key	Hot Key	Hot Key
Built-in Microphone	Yes	Yes	Yes	Yes
Built-in Stereo Speakers	Yes	Yes	Yes	Yes

LCD Display

Feature	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT	VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT
			Model	
Display Type	12.1" SVGA DSTN Color	12.1" SVGA DSTN Color	12.1" SVGA TFT Color	12.1" SVGA TFT Color
Video Processor	NM2093	NM2093	NM2093	NM2093
Video Accelerator	BitBLT Hardware	BitBLT Hardware	BitBLT Hardware	BitBLT Hardware
Video RAM	1.1MB	1.1MB	1.1MB	1.1MB
Graphic Resolution	800x600	800x600	800x600	800x600
Colors	64,000	64,000	64,000	64,000
Zoom Video	Yes	Yes	Yes	Yes

PCMCIA (PCI)

Feature	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT	VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT
			Model	
PCMCIA Type II/III Support	2 type I or 1 Type II	2 type I or 1 Type II	2 type I or 1 Type II	2 type I or 1 Type II
Revision Support	3.0	3.0	3.0	3.0
Controller	Cirrus 6832	Cirrus 6832	Cirrus 6832	Cirrus 6832

BIOS Support

Feature	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT	VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT
			Model	
Supplier	Phoenix 4.05	Phoenix 4.05	Phoenix 4.05	Phoenix 4.05
PC '95A Compliant	Yes	Yes	Yes	Yes
Flash ROM Size	256KB	256KB	256KB	256KB
Suspend to RAM	Yes	Yes	Yes	Yes
Suspend to Disk	Yes	Yes	Yes	Yes
Password	On boot, On resume	On boot, On resume	On boot, On resume	On boot, On resume

Battery, Status Display, Keyboard

Feature	Model			
	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	**VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT**	**VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT**
Main Battery	ENiMH 32.4 WHr			ENiMH 42 WHr
Battery recharge with system OFF	2 hours for single battery			3 hours for single battery
Battery recharge with system ON	3.5 hours for single battery			5 hours for single battery
Real time clock/calendar	Yes	Yes	Yes	Yes
Status LCD	Battery Gas Gauge, HDD/CD Activity, FDD Activity, CRT/LCD/SIMUL, Caps Lock, NUM Lock, OVR, Scroll Lock, LED for AC and Battery charging			
Standard Keyboard	83 Keys + 2 Win 95 Keys			
Japanese Keyboard	85 Keys + 2 Win 95 Keys			

Physical

Feature	Model			
	VSS5120 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN	**VSS5133 1.08GB drive, 16MB RAM, 12.1" SVGA DSTN**	**VTS5150 1.44GB drive, 16MB RAM, 12.1" SVGA TFT**	**VTS5166 2.1GB drive, 16MB RAM, 12.1" SVGA TFT**
Dimensions WxDxH inches	11.8x8.9x2.06	11.8x8.9x2.06	11.8x8.9x2.06	11.8x8.9x2.06
Weight with FDD	7.3 lbs	7.3 lbs	7.2 lbs	6.9 lbs
Weight with CD-ROM	7.5 lbs	7.5 lbs	7.3 lbs	7.2 lbs
Weight with CD-ROM/FDD Combo	7.7 lbs	7.7 lbs	7.6 lbs	7.4 lbs

B
Device Mapping

Memory Map

Range	Name	Function
0h to 9FFFFh	640KB System Memory	System Memory Space
A0000h to BFFFFh	128K Video Memory	Graphics Display Memory Buffer
C0000h to C7FFFh	32KB Video BIOS ROM	Shadow BIOS of VGA
C8000h to DFFFFh	96KB I/O Expansion ROM	Reserved ROM Space for I/O Adapter
E0000h to FFFFFh	128KB System ROM	BIOS of System and VGA
100000h to 27FFFFFh	Additional Memory Space	Extended Memory Space, Size from 8MB up to 40MB

DMA Channel Assignments

Channel	Controller	Function
0	1	Not used
1	1	Sound
2	1	Diskette controller
3	1	Not used
4	2	Cascade DMA
5	2	Not used
6	2	Not used
7	2	Not used

Notebook Computer Interrupt Levels

IRQ	Normal Assignments (FIS)
0	System Timer
1	Keyboard
2	Programmable Interrupt Controller
3	Serial Port Com2
4	Serial Port Com1
5	Audio
6	Floppy Disk Controller
7	Parallel Port LPT1
8	CMOS/Real time clock
9	Available
10	Available
11	Available
12	Track Pad
13	Numeric data processor
14	Hard disk controller
15	Available

1. IR port assignment if enabled

I/O Address Map

Range (hexadecimal)	Function
000 - 00F	DMA controller A
020 - 021	Master interrupt controller
024	Index register - system board
026	Data register - system board
040 - 043	Interval timer
060 - 06F	Keyboard controller
070 - 07F	Real-time clock (RTC), NMI
080 - 08F	DMA page register
0A0 - 0A1	Slave interrupt controller
0C0 - 0CF	DMA controller B
0F0	Clear math coprocessor
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
1F0 - 1F7	IDE controller
220-22F	On-board sound (1688)
278 - 27F[*]	LPT2
2E8 - 2EF[*]	COM4
2F8 - 2FF[*]	COM2
378 - 37F[*]	LPT1
3B0 - 3DF	Mono VGA registers
3BC - 3BE[*]	LPT3
3C0 - 3DF	Mono VGA
3D0 - 3DF	Color VGA registers
3E8 - 3EF[*]	COM 3
3F0 - 3F7[*]	Diskette controller
3F6 - 3F7[*]	IDE controller (alt status, device address)
3F8 - 3FF[*]	COM1

[*] Enabled and disabled using the Setup Utility or Windows 95

C

System Connector Pin Assignments

System Interconnection Diagram

Figure A-1 shows the location of the motherboard connectors. The following sections provide a tabular listing the pin assignments for each of these connectors.
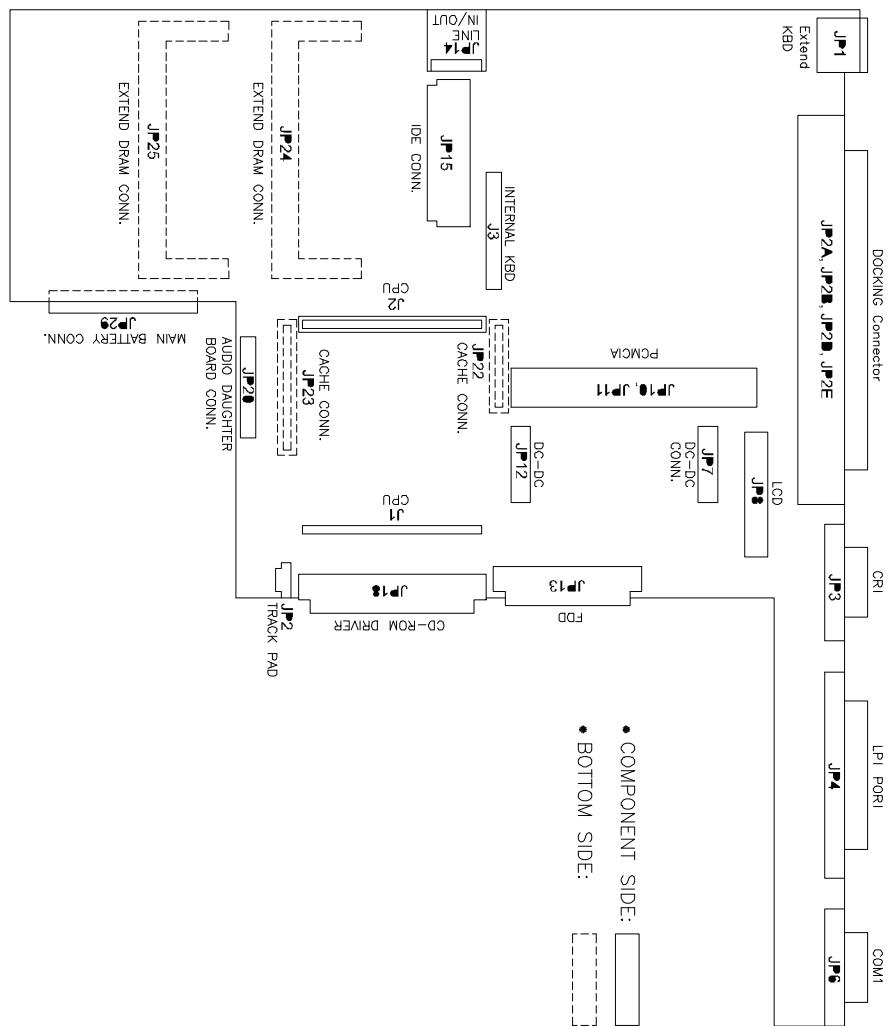
Figure C-1 System Connector Locations

External KBD Connector – JP1

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	KB/PS2_D	2.	NC
3.	GND	4.	+5VS
5.	KB/PS2_D	6.	NC

Docking Connector – JP2A, JP2B, JP2C, JP2D, JP2E

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	PREMATE#
3.	CONA#	4.	AUD_GND
5.	DGNTA#	6.	MOD_IDO
7.	MOD_ID2	8.	AOUT_L
9.	+5VS	10.	PCLK/DOCK
11.	C_BE0#	12.	CBE2#
13.	CBE3#	14.	DADO
15.	DAD4	16.	GND
17.	DLOCK#	18.	DAD10
19..	DAD14	20.	DPERR#
21.	+5VS	22.	DAD18
23.	DAD22	24.	REQ3#
25.	GNT3#	26.	Q_BFVCC
27.	INTC#	28.	GND
29.	DAD26	30.	DAD30
31.	DD0	32.	DD1
33.	DD3	34.	DD4
35.	+3VS	36.	PDIAG#
37.	HDDLED#	38.	GND
39.	PIRQ2	40.	IRQ4
41.	IRQ6	42.	DDC_DATA
43.	MUXSEL	44.	INSPKOFF#
45.	+5VS	46.	DSR1#
47.	RXD1	48.	CTS1#
49.	RI1#	50.	LPD5
51.	LPD1	52.	NC
53.	HSYNC	54.	CRT_GND
55.	CRT_GND	56.	CRT_GND
57.	VIN	58.	CHG/AC#
59.	PREMATE#	60.	DCGND
61.	GND	62.	GND
63.	LINE_IN_L	64.	LIN_IN_R
65.	GND	66.	MOD_ID1
67.	AOUT_R	68.	DPCIRST#
69.	WAKE_UP#	70.	GND

PIN NO	SIGNAL	PIN NO	SIGNAL
71.	C_BE1#	72.	+3VS
73.	DDEVSEL#	74.	DAD2
75.	DAD6	76.	DFRAME#
77.	DAD8	78.	DAD12
79.	GND	80.	DSTOP#
81.	DAD16	82.	DAD20
83.	GND	84.	DREQ#1
85.	DGNT#1	86.	INTA#
87.	DCLKRUN#	88.	DAD24
89.	DAD28	90.	GND
91.	DERQA#	92.	DD2
93.	GND	94.	DD6
95.	SUSP#	96.	RST_BTN#
97.	EN_CHG#	98.	DD_CLK
99.	IRQ3	100.	IRQ5
101.	GND	102.	IRQ7
103.	IRQ9	104.	EXTFDD
105.	DCD1#	106.	TXD1
107.	DTR1#	108.	RTS1#
109.	LPD7	110.	LPD3
111.	NC	112.	VSYNC
113.	G	114.	R
115.	B	116.	ACCON
117.	VIN	118.	C/CP#/G#
119.	DCGND	120.	DCGND
121.	DOCK_SPK_R1	122.	CD_L
123.	MIC	124.	CD_R
125.	M_SEN2#	126.	MIDI_IN
127.	FAX_SPK	128.	DOCKON
129.	IDERST#	130.	DIOR#
131.	SA0	132.	SA1
133.	FDDA#	134.	+3VS
135.	DAD5	136.	DIRDY#
137.	DAD9	138.	DAD13
139.	GND	140.	DTRDY#
141.	DAD17	142.	DAD21
143.	GND	144.	DREQ#0
145.	+3VS	146.	INTB#
147.	S/RBTN	148.	DAD25
149.	DAD29	150.	+3VS
151.	KBD_CLK	152.	AUX_DATA
153.	DD5	154.	DD8
155.	DD10	156.	DCS1#

System Connector Pin Assignments

PIN NO	SIGNAL	PIN NO	SIGNAL
157.	IOCS16#	158.	DD11
159.	DD13	160.	DD15
161.	IRQ10	162.	IRQ12
163.	IRQ15	164.	+3VS
165.	RTSB#	166.	TXDB
167.	DTRB#	168.	RIB#
169.	KEY_LOCK#	170.	LPD4
171.	LPD2	172.	LPTSLCT
173	LPTPE	174.	LPTACK#
175.	LPTERR#	176.	CONA#
177.	VIN	178.	CP/G#
179..	QVCC_OK	180.	DCGND
181.	DOCK_SPK_L1	182.	AUD_GND
183.	AUD_GND	184.	AUD_GND
185.	+12VS	186.	S_UNDOCK
187.	MIDI_OUT	188.	DOCKED#
189.	NIC_PR#	190.	DIOW#
191.	IRQ14	192.	ON/OFFBTN
193.	SA2	194.	DAD1
195.	DAD3	196.	DAD7
197.	DPAR	198.	DAD11
199.	DAD15	200.	DSERR#
201.	+5VS	202.	DAD19
203.	DAD23	204.	DREQ#2
205.	DGNT#2	206.	DGNT#0
207.	INTD#	208.	GND
209.	DAD27	210.	DAD31
211.	KBD_DATA	212.	AUX_CLK
213.	+5VS	214.	DD7
215.	DD9	216.	GND
217.	DCS3#	218.	DIORDY
219.	DD12	220.	DD14
221.	GND	222.	IRQ11
223.	UNDOCK	224.	PMIRQ
225.	DCDB#	226.	DSRB#
227.	RXDB	228.	CTSB#
229.	+5VS	230.	LPD6
231.	LPTBUSY	232.	LPD0
233.	AUTOFD#	234.	INIT#
235.	SLCTIN#	236.	TSR2_FDD#
237.	VIN	238.	VIN
239.	QVCC_OK	240.	DCGND

CRT Connector – JP3

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	R	2.	G
3.	B	4.	NC
5.	CRTGND	6.	CRTGND
7.	CRTGND	8.	CRTGND
9.	NC	10.	CRTGND
11.	NC	12.	DDCDATA1
13.	HSYNC1	14.	VSYNC1
15.	DDCCLK1		

Parallel Port Connector – JP4

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	LPTSTB#	2.	FD0
3.	FD1	4.	FD2
5.	FD3	6.	FD4
7.	FD5	8.	FD6
9.	FD7	10.	LPTACK#
11.	LPTBUSY	12.	LPTPE
13.	LTPSLCT#	14.	AFD#
15.	LPTERR#	16.	LPTINIT#
17.	LPTSLCTIN#	18.	GND
19.	GND	20.	GND
21.	GND	22.	GND
23.	GND	24.	EXTFDD
25.	GND		

IR Connector – JP5

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+5VS	2.	IRTX
3.	IRRXB/IRMOD	4.	IRRX
5	GND	6	INT_SP_R1
7.	INT_SP_R2	8.	+5V51
9.	SW_CLK	10.	SW_DATA
11.	ON/OFFBTN	12.	S/RBTN
13.	INT_SP_L1	14.	INT_SP_L2
15.	31G2/30G2#		

Serial Port(COM 1) – JP6

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	DCD1#	2.	RXD1#
3.	TXD1	4.	DTR1#
5.	GND	6.	DSR1#
7.	RTS1#	8.	CTS1#
9.	RI1#		

DC-to-DC Connector – JP7

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	VIN	2.	VIN
3.	VIN	4.	ACOFF#
5.	DCGND	6.	TRICKLEB#
7.	DCGND	8.	NC
9.	DCGND	10.	ACCON
11.	B+	12.	ACIN#
13.	B+	14.	A/B#USE
15.	VBTA	16.	FAST#
17.	VBTB	18.	SUSP#
19..	CHGI	20.	+5V51
21.	GND	22.	VS
23.	GND	24.	SYSON#
25.	POK	26.	51ON#
27.	VOLTID3	28.	TRICKLEA#
29.	VOLTID4	30.	LI/NIMH#

LCD Connector – JP8

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	FLM	2.	LCD3
3.	DISPOFF#	4.	LCD1
5.	LP	6.	LCD10
7.	GND	8.	LCD12
9.	SHFCLK	10.	LCD0
11.	GND	12.	LCD6
13.	LCD8	14.	GND
15.	LCD9	16.	GND
17.	LCD10	18.	GND
19..	LCD11	20.	LCD18
21.	LCD0	22.	LCD19
23.	LCD1	24.	LCD20
25.	LCD2	26.	LCD21
27	LCD3	28	LCD22

PIN NO	SIGNAL	PIN NO	SIGNAL
29	LCD12	30	LCD23
31	LCD13	32	PID0
33	LCD14	34	PID1
35	LCD15	36	SW_CLK
37	LCD4	38	SW_DATA
39	LCD5	40	AUD_GND
41	LCD6	42	INT_MIC
43	LCD7	44	AUD_GND
45	LCD14	46	B+
47	GND	48	B+
49	GND	50	B+
51	LCD4	52	GND
53	LCD13	54	GND
55	LCD VDD	56	GND
57	LCD VDD	58	INV_CLK
59	LCD VDD	60	INV_RST
61	DE	62	INV_DATA
63	LCD16	64	GND
65	LCD8	66	GND
67	LCD11	68	+5VS
69	LCD5	70	SUSP_LED
71	LCD17	72	DISPOFF#
73	LCD9	74	PID2
75	GND	76	PID3

PCMCIA Slot A – JP10

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2	A_D3
3.	A_D4	4	GND
5.	A_D5	6	A_D6
7.	GND	8	A_D7
9.	A_CE1\	10	GND
11.	A_A10	12	A_OE\
13.	GND	14	A_A11
15.	A_A9	16	GND
17.	A_A8	18	A_A13
19..	GND	20	A_A14
21.	A_WE\	22	GND
23.	A_RDY/IRQ\	24	A_SLOT_VCC
25.	GND	26	GND
27.	A_VPP	28	A_A16
29.	GND	30	A_A15
31.	A_A12	32	GND
33.	A_A7	34	A_6
35.	GND	36	A_A5
37.	A_A4	38	GND
39.	A_A3	40	A_A2
41.	GND	42	A_A1
43.	A_A0	44	GND
45.	A_D0	46	A_D1
47.	GND	48	A_D2
49.	A_WP	50	GND
51.	GND	52	A_CD1\
53.	A_D11	54	GND
55.	A_D12	56	A_D13
57.	GND	58	A_D14
59.	A_D15	60	GND
61.	A_CE2\	62	A_VS1
63.	GND	64	A_IORD\
65.	A_IOWR\	66	GND
67.	A_A17	68	A_A18
69.	GND	70.	A_A19
71.	A_A20	72.	GND
73.	A_A21	74.	A_SLOT_VCC
75.	GND	76.	GND
77.	A_VPP	78.	A_A22
79.	GND	80.	A_A23
81.	A_A24	82.	GND
83.	A_A25	84.	A_VS2

PIN NO	SIGNAL	PIN NO	SIGNAL
85.	GND	86.	A_RESET
87.	A_WAIT	88.	GND
89.	A_INPACK	90.	A_REG\
91.	GND	92.	A_BVD2
93.	A_BVD1	94.	GND
95.	A_D8	96.	A_D9
97.	GND	98.	A_D10
99.	A_CD2\	100.	GND

PCMCIA Slot B – JP11

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2	B_D3
3.	B_D4	4	GND
5.	B_D5	6	B_D6
7.	GND	8	B_D7
9.	B_CE1\	10	GND
11.	B_A10	12	B_OE\
13.	GND	14	B_A11
15.	B_A9	16	GND
17.	B_A8	18	B_A13
19..	GND	20	B_A14
21.	B_WE\	22	GND
23.	B_RDY/IRQ\	24	B_SLOT_VCC
25.	GND	26	GND
27.	B_VPP	28	B_A16
29.	GND	30	B_A15
31.	B_A12	32	GND
33.	B_A7	34	B_6
35.	GND	36	B_A5
37.	B_A4	38	GND
39.	B_A3	40	B_A2
41.	GND	42	B_A1
43.	B_A0	44	GND
45.	B_D0	46	B_D1
47.	GND	48	B_D2
49.	B_WP	50	GND
51.	GND	52	B_CD1\
53.	B_D11	54	GND
55.	B_D12	56	B_D13
57.	GND	58	B_D14
59.	B_D15	60	GND
61.	B_CE2\	62	B_VS1

PIN NO	SIGNAL	PIN NO	SIGNAL
63.	GND	64	B_IORD\
65.	B_IOWR\	66	GND
67.	B_A17	68	B_A18
69.	GND	70.	B_A19
71.	B_A20	72.	GND
73.	B_A21	74.	B_SLOT_VCC
75.	GND	76.	GND
77.	B_VPP	78.	B_A22
79.	GND	80.	B_A23
81.	B_A24	82.	GND
83.	B_A25	84.	B_VS2
85.	GND	86.	B_RESET
87.	B_WAIT	88.	GND
89.	B_INPACK	90.	B_REG\
91.	GND	92.	B_BVD2
93.	B_BVD1	94.	GND
95.	B_D8	96.	B_D9
97.	GND	98.	B_D10
99.	B_CD2\	100.	GND

DC-to-DC Connector – JP12 Conn2

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	VMBA	2.	VMBA
3.	VMBA	4.	VMBA
5.	VMBA	6.	VMBA
7.	VMBB	8.	VMBB
9.	VMBB	10.	VMBB
11.	GND	12.	GND
13.	GND	14.	GND
15.	CPUVCC	16.	VCCCPU
17.	CPUVCC	18.	VCCCPU
19..	CPUVCC	20.	+5V
21.	+5V	22.	+5V
23.	GND	24.	GND
25.	GND	26.	GND
27.	+3V	28.	+3V
29.	+12V	30.	+3V

FDD Connector – JP13

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	MBB	2.	DCGND
3.	MBB	4.	DCGND

PIN NO	SIGNAL	PIN NO	SIGNAL
5.	MBB	6.	DCGND
7.	MBB	8.	DCGND
9.	MBB	10.	DCGND
11.	SMDB	12.	NC
13.	TEMPB	14.	NC
15.	CHG/AC#	16.	NC
17.	ACCON	18.	NC
19.	SMCB	20.	NC
21.	WP#	22.	GND
23.	RDATA	24.	HDSEL
25.	GND	26.	GND
27.	TRACK0#	28.	WGATE#
29.	WDATA	30.	FDDA#
31.	STEP#	32.	3MODE#
33.	MTR0#	34.	FDDIR
35.	DSKCHG#	36.	+5VS
37.	DRV0#	38.	+5VS
39.	INDEX#	40.	+5VS

Audio IN/OUT Connector – JP14

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	SPKOUT_L1	2.	EXT_SPK_L
3.	DCGND	4.	DIS_MIC
5.	DCGNDT	6	AUD_GND
7.	ACCON	8.	MIC
9.	DCGND	10.	AUD_GND
11.	VIN	12.	NC
13.	SPKOUT_R1	14.	EXT_SPK_R

IDE Connector – JP15

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+5VS	2.	GND
3.	+5VS	4.	+5VS
5.	GND	6.	HDDLED#
7.	DCS3#	8.	DCS1#
9.	SA2	10.	SA0
11.	GND	12.	SA1
13.	PDIAG#	14.	IRQ14
15.	NC	16.	IORDY
17.	GND	18.	DIOR#
19.	GND	20.	DIOW#

System Connector Pin Assignments

PIN NO	SIGNAL	PIN NO	SIGNAL
21.	GND	22.	GND
23.	DD15	24.	DD0
25.	DD14	26.	DD1
27.	DD13	28.	DD2
29.	DD12	30.	DD3
31.	DD11	32.	DD4
33.	DD10	34.	DD5
35.	DD9	36.	DD6
37.	DD8	38.	DD7
39.	GND	40.	IDERST#

CD_ROM Drive Connector – JP18

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	IDERST#	2.	GND
3.	DD7	4.	DD8
5.	DD6	6.	DD9
7.	DD5	8.	DD10
9.	DD4	10.	DD11
11.	DD3	12.	DD12
13.	DD2	14.	DD13
15.	DD1	16.	DD14
17.	DD0	18.	DD15
19.	GND	20.	NC
21.	NC	22.	GND
23.	DIOW#	24.	GND
25.	DIOR#	26.	GND
27.	DIORDY	28.	NC
29.	NC	30.	CD-ROM#
31.	IRQ14	32.	NC
33.	SA1	34.	PDIAG
35.	SA0	36.	SA2
37.	DCS1#	38.	DCS3#
39.	HDDLED#	40.	GND
41.	+5V	42.	+5VS
43.	GND	44.	NC
45.	NC	46.	NC
47.	CD_R	48.	AUD_GND
49.	CD_L	50.	AUD_GND

Track Pad Connector – JP2

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	VCC	2.	TP_CLK
3.	TP_DATA	4.	GND

Audio Daughter Board Connector – JP20

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	SA0	2.	AUDGND
3.	SA1	4.	MIC
5.	SA2	6.	AUDGND
7.	SA3	8.	MIC_CNT#
9.	SA4	10.	INT_MIC
11.	SA5	12.	AUD_OFF
13.	SA6	14.	SD0
15.	SA7	16.	SD1
17.	SA8	18.	SD2
19..	SA9	20.	SD3
21.	SA10	22.	SD4
23.	SA11	24.	SD5
25.	RSTDRV	26.	SD6
27.	IOR#	28.	SD7
29.	IOW#	30.	A_PMIRQ
31.	AEN	32.	+5VS
33.	LINE_IN_R	34.	CD_R
35.	LINE_IN_L	36.	CD_L
37.	SDATA	38.	SA11
39.	GND	40.	MIDI_IN
41.	14.3M_AUD	42.	MIDI_OUT
43.	MCLK	44.	PMDAK1#
45.	AOUT_R	46.	PMDRQ1#
47.	AOUT_L	48.	EXTSPK_R1
49.	SCLK	50.	SPKOUT_R2
51.	SPK_OUT	52.	PMDAK0#
53.	+12VS	54.	PMDRQ0#
55.	EXTSPK_L	56.	PMDAK2#
57.	SPKOUT_L2	58.	PMDRQ2#
59.	LRCLK	60.	SUSP#

MPEG Connector – JP21

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+5VS	2.	AD0
3.	AD8	4.	AD1
5.	AD9	6.	AD2
7.	AD10	8.	AD3
9.	AD11	10.	AD4
11.	AD12	12.	AD5
13.	AD13	14.	AD6
15.	AD14	16.	AD7

PIN NO	SIGNAL	PIN NO	SIGNAL
17.	AD15	18.	NC
19.	NC	20.	NC
21.	NC	22.	GND
23.	+5VS	24.	NC
25.	NC	26.	NC
27.	NC	28.	NC
29.	+5VS	30.	NC
31.	NC	32.	NC
33.	NC	34.	GND
35.	AD16	36.	PIRQA#
37.	AD17	38.	AD19
39.	AD18	40.	AD20
41.	+5VS	42.	AD21
43.	TRDY#	44.	DEVSEL#
45.	IRDY#	46.	STOP#
47.	FRAME#	48.	PERR#
49.	+5VS	50.	PAR
51.	C/BE1#	52.	C/BE0#
53.	PCIRST	54.	GND
55.	REQ#1	56.	PCLK_MPEG
57.	GNT#1	58.	GND
59.	C/BE2#	60.	C/BE3#
61.	AD22	62.	AD31
63.	AD23	64.	AD30
65.	AD24	66.	AD29
67.	AD25	68.	AD28
69.	AD26	70.	AD27

Cache Connector – JP22

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+3VS	2.	D20
3.	D0	4.	D21
5.	D1	6.	D22
7.	D2	8.	D23
9.	D3	10.	+3VS
11.	GND	12.	D24
13.	D4	14.	D25
15.	D5	16.	D26
17.	D6	18.	D27
19..	D7	20.	GND
21.	+3VS	22.	D28
23.	D8	24.	D29
25.	D9	26.	D30
27.	D10	28.	D31
29.	D11	30.	+3VS
31.	GND	32.	ADS#
33.	D12	34.	CADS#
35.	D13	36.	CADV#
37.	D14	38.	COE#
39.	D15	40.	GND
41.	+3VS	42.	CCS#
43.	D16	44.	CWE#0
45.	D17	46.	CWE#1
47.	D18	48.	CWE#2
49.	D19	50.	A30

Cache Connector – JP23

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+3VS	2.	D56
3.	D32	4.	D57
5.	D33	6.	D58
7.	D34	8.	D59
9.	D35	10.	+3VS
11.	GND	12.	D60
13.	D36	14.	D61
15.	D37	16.	D62
17.	D38	18.	D63
19..	D39	20.	GND
21.	+3VS	22.	A16
23.	D40	24.	A17
25.	D41	26.	A18
27.	D42	28.	A3
29.	D43	30.	+3VS
31.	GND	32.	A4
33.	D44	34.	A5
35.	D45	36.	A6
37.	D46	38.	A7
39.	D47	40.	GND
41.	+3VS	42.	A8
43.	D48	44.	A9
45.	D49	46.	A10
47.	D50	48.	A11
49.	D51	50.	+3VS
51.	GND	52.	A12
53.	D52	54.	A13
55.	D53	56.	A14
57.	D54	58.	A15
59.	D55	60.	GND
61.	+3VS	62.	TA4
63.	TA0	64.	TA5
65.	TA1	66.	TA6
67.	TA2	68.	TA7
69.	TA3	70.	+3VS
71.	GND	72.	CWE#6
73.	CWE#3	74.	CWE#7
75.	CWE#4	76.	GND
77.	CWE#5	78.	HCLK_SRAMO
79.	TWE#	80.	GND

Extend DRAM Connector – JP24

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	MD32
3.	MD33	4.	MD34
5.	MD35	6.	MD36
7.	MD37	8.	MD38
9.	MD39	10.	MEMVCC
11.	DPU0	12.	MMA0B
13.	MMA1B	14.	MMA2
15.	MMA3	16.	MMA4
17.	MMA5	18.	MMA6
19..	MMA10	20.	NC
21.	MD40	22.	MD41
23.	MD42	24.	MD43
25.	MD44	26.	MD45
27.	MD46	28.	MM47
29.	MMA11	30.	MEMVCC
31.	MMA8	32.	MMA9
33.	RAS#3	34.	RAS#2
35.	MD47	36.	NC
37.	MD48	38.	MD49
39.	GND	40.	CAS#4
41.	CAS#6	42.	CAS#7
43.	CAS#5	44.	RAS#2
45.	CAS#2	46.	NC
47.	MWEB#	48.	NC
49.	MD50	50.	MD51
51.	MD 52	52.	MD53
53.	MD 54	54.	MD55
55.	NC	56.	MD56
57.	MD 57	58.	MD58
59.	MD 60	60.	MD59
61.	MEMVCC	62.	MD61
63.	MD62	64.	MD63
65.	NC	66.	DPU1
67.	DPU2	68.	DPU3
69.	DPU4	70.	DPU5
71.	DPU6	72.	GND

Extend DRAM Connector – JP25

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	MD0
3.	MD1	4.	MD2
5.	MD3	6.	MD4
7.	MD5	8.	MD6
9.	MD7	10.	+MEMVCC
11.	DPU0	12.	MMA0B
13.	MMA1B	14.	MMA2
15.	MMA3	16.	MMA4
17.	MMA5	18.	MMA6
19..	MMA10	20.	NC
21.	MD8	22.	MD9
23.	MD10	24.	MD11
25.	MD12	26.	MD13
27.	MD14	28.	MMA7
29.	MMA11	30.	+MEMVCC
31.	MMA8	32.	MMA9
33.	RAS#3	34.	RAS#2
35.	MD15	36.	NC
37.	MD16	38.	MD17
39.	GND	40.	CAS#0
41.	CAS#2	42.	CAS#3
43.	CAS#1	44.	RAS#2
45.	RAS#3	46.	NC
47.	MWEB#	48.	NC
49.	MD18	50.	MD19
51.	MD20	52.	MD21
53.	MD22	54.	MD23
55.	NC	56.	MD24
57.	MD25	58.	MD26
59.	MD28	60.	MD27
61.	+MEMVCC	62.	MD29
63.	MD30	64.	MD31
65.	NC	66.	DPU1
67.	DPU2	68.	DPU3
69.	DPU4	70.	DPU5
71.	DPU6	72.	GND

Main Battery Connector – JP26

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	MBA	2.	SMCA
3.	SMDA	4.	TEMPA
5.	DCGND		

CPU Daughter-Board Connector – JP17

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	BE#3	2.	BE#2
3.	BE#1	4.	BE#0
5.	A20M#	6.	FLUSH#
7.	+3VSCPUC	8.	+3VSCPUC
9.	GND	10.	GND
11.	BUSCHK#	12.	W/R#
13.	NC	14.	HITM#
15.	ADS#	16.	EADS#
17.	+3VSCPUC	18.	+3VSCPUC
19..	GND	20.	GND
21.	D/C#	22.	NC
23.	NC	24.	LOCK#
25.	AP	26.	NC
27.	+3VSCPUC	28.	+3VSCPUC
29.	GND	30.	GND
31.	NC	32.	NC
33.	NC	34.	NC
35.	SMIACT#	36.	HOLD
37.	+3VSCPUC	38.	+3VSCPUC
39.	GND	40.	GND
41.	WB/WT#	42.	NA#
43.	BOFF#	44.	BRDY#
45.	KEN#	46.	AHOLD
47.	+3VSCPUC	48.	+3VSCPUC
49.	GND	50.	GND
51.	KEN#	52.	EWBE#
53.	CACHE#	54.	M/IO#
55.	NC	56.	NC
57.	+3VSCPUC	58.	+3VSCPUC
59.	GND	60.	GND
61.	NC	62.	NC
63.	FERR#	64.	NC
65.	DP7	66.	D63
67.	+3VSCPUC	68.	+3VSCPUC
69.	GND	70.	GND

PIN NO	SIGNAL	PIN NO	SIGNAL
71.	D62	72.	D61
73.	D60	74.	D59
75.	D58	76.	D57
77.	+3VSCPUC	78.	+3VSCPUC
79.	GND	80.	GND
81.	D56	82.	DP6
83.	D55	84.	D54
85.	D53	86.	D52
87.	+3VSCPUC	88.	+3VSCPUC
89.	GND	90.	GND
91.	D51	92.	D50
93.	D49	94.	D48
95.	DP5	96.	D47
97.	+3VSCPUC	98.	+3VSCPUC
99.	GND	100.	GND
101.	D46	102.	D45
103.	D44	104.	D43
105.	D42	106.	D41
107.	+3VSCPUC	108.	+3VSCPUC
109.	GND	110.	GND
111.	D40	112.	DP4
113.	D39	114.	D38
115.	D37	116.	D36
117.	+3VSCPUC	118.	+3VSCPUC
119.	GND	120.	GND
121.	D35	122.	D34
123.	D33	124.	D32
125.	DP3	126.	D31
127.	+3VSCPUC	128.	+3VSCPUC
129.	GND	130.	GND
131.	D30	132.	D29
133.	D29	134.	D27
135.	D26	136.	D25
137.	+3VSCPUC	138.	+3VSCPUC
139.	GND	140.	GND
141.	D24	142.	DP2
143.	D23	144.	D22
145.	D21	146.	D20
147.	+3VSCPUC	148.	+3VSCPUC
149.	GND	150.	GND
151.	NC	152.	NC
153.	+3VSCPUC	154.	+3VSCPUC
155.	GND	156.	GND

PIN NO	SIGNAL	PIN NO	SIGNAL
157.	VOLTID1	158.	VOLTID2
159.	VOLTID3	160.	+5VS

CPU Daughter-Board Connector – JP16

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	CORE_VCCCPU	4.	CORE_VCCCPU
5.	D19	6.	D18
7.	D17	8.	D16
9.	GND	10.	GND
11.	CORE_VCCCPU	12.	CORE_VCCCPU
13.	DP1	14.	D15
15.	D14	16.	D13
17.	GND	18.	GND
19..	CORE_VCCCPU	20.	CORE_VCCCPU
21.	D12	22.	D11
23.	D10	24.	D9
25.	GND	26.	GND
27.	CORE_VCCCPU	28.	CORE_VCCCPU
29.	D8	30.	DP0
31.	D7	32.	D6
33.	GND	34.	GND
35.	CORE_VCCCPU	36.	CORE_VCCCPU
37.	D5	38.	D4
39.	D3	40.	D2
41.	GND	42.	GND
43.	CORE_VCCCPU	44.	CORE_VCCCPU
45.	D1	46.	D0
47.	NC	48.	NC
49.	GND	50.	GND
51.	CORE_VCCCPU	52.	CORE_VCCCPU
53.	NC	54.	NC
55.	NC	56.	NC
57.	GND	58.	GND
59.	CORE_VCCCPU	60.	CORE_VCCCPU
61.	NC	62.	NC
63.	CPU_TEMP	64.	STPCLK#
65.	GND	66.	GND
67.	CORE_VCCCPU	68.	CORE_VCCCPU
69.	CORE_VCCCPU	70.	CORE_VCCCPU
71.	N6	72.	PEN#
73.	GND	74.	GND

PIN NO	SIGNAL	PIN NO	SIGNAL
75.	CORE_VCCCPU	76.	CORE_VCCCPU
77.	CPUINIT	78.	IGNNE#
79.	SMI#	80.	INTR
81.	GND	82.	GND
83.	CORE_VCCCPU	84.	CORE_VCCCPU
85.	NC	86.	NMI
87.	A21	88.	A22
89.	GND	90.	GND
91.	CORE_VCCCPU	92.	CORE_VCCCPU
93.	A23	94.	A24
95.	A25	96.	A26
97.	GND	98.	GND
99.	CORE_VCCCPU	100.	CORE_VCCCPU
101.	A27	102.	A28
103.	A29	104.	A30
105.	GND	106.	GND
107.	CORE_VCCCPU	108.	CORE_VCCCPU
109.	A31	110.	A3
111.	A4	112.	A5
113.	GND	114.	GND
115.	CORE_VCCCPU	116.	CORE_VCCCPU
117.	A6	118.	A7
119.	A8	120.	A9
121.	GND	122.	GND
123.	CORE_VCCCPU	124.	CORE_VCCCPU
125.	A10	126.	A11
127.	A12	128.	A13
129.	GND	130.	GND
131.	CORE_VCCCPU	132.	CORE_VCCCPU
133.	A14	134.	A15
135.	A16	136.	A17
137.	GND	138.	GND
139.	CORE_VCCCPU	140.	CORE_VCCCPU
141.	A18	142.	A19
143.	A20	144.	CORE_VCCCPU
145.	CPURST	146.	HCLK_CPU
147.	CORE_VCCCPU	148.	CORE_VCCCPU
149.	GND	150.	GND

PIN NO	SIGNAL	PIN NO	SIGNAL
151.	NC	152.	BE#7
153.	BE#6	154.	GND
155.	CORE_VCCCPU	156.	CORE_VCCCPU
157.	BE#4	158.	BE#5
159.	CORE_VCCCPU	160.	CORE_VCCCPU
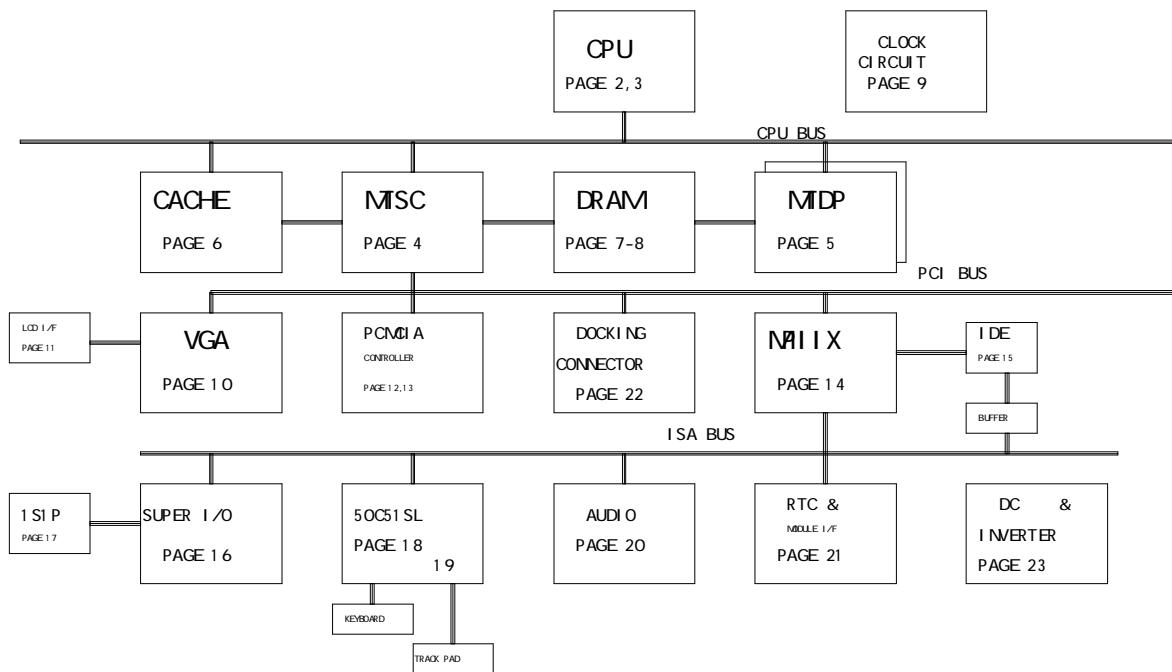
Internal Keyboard Connector – J3

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	KSO0	2.	KSO1
3.	KSO2	4.	KSO3
5.	KSO4	6.	KSO5
7.	KSO6	8.	KSO7
9.	KSO8	10.	KSO9
11.	KSO10	12.	KSO11
13.	KSO12	14.	KSO13
15.	KSO14	16.	KSO15
17.	KSI0	18.	KSI1
19.	KSI2	20.	KSI3
21.	KSI4	22.	KSI5
23.	KSI6	24	KSI7
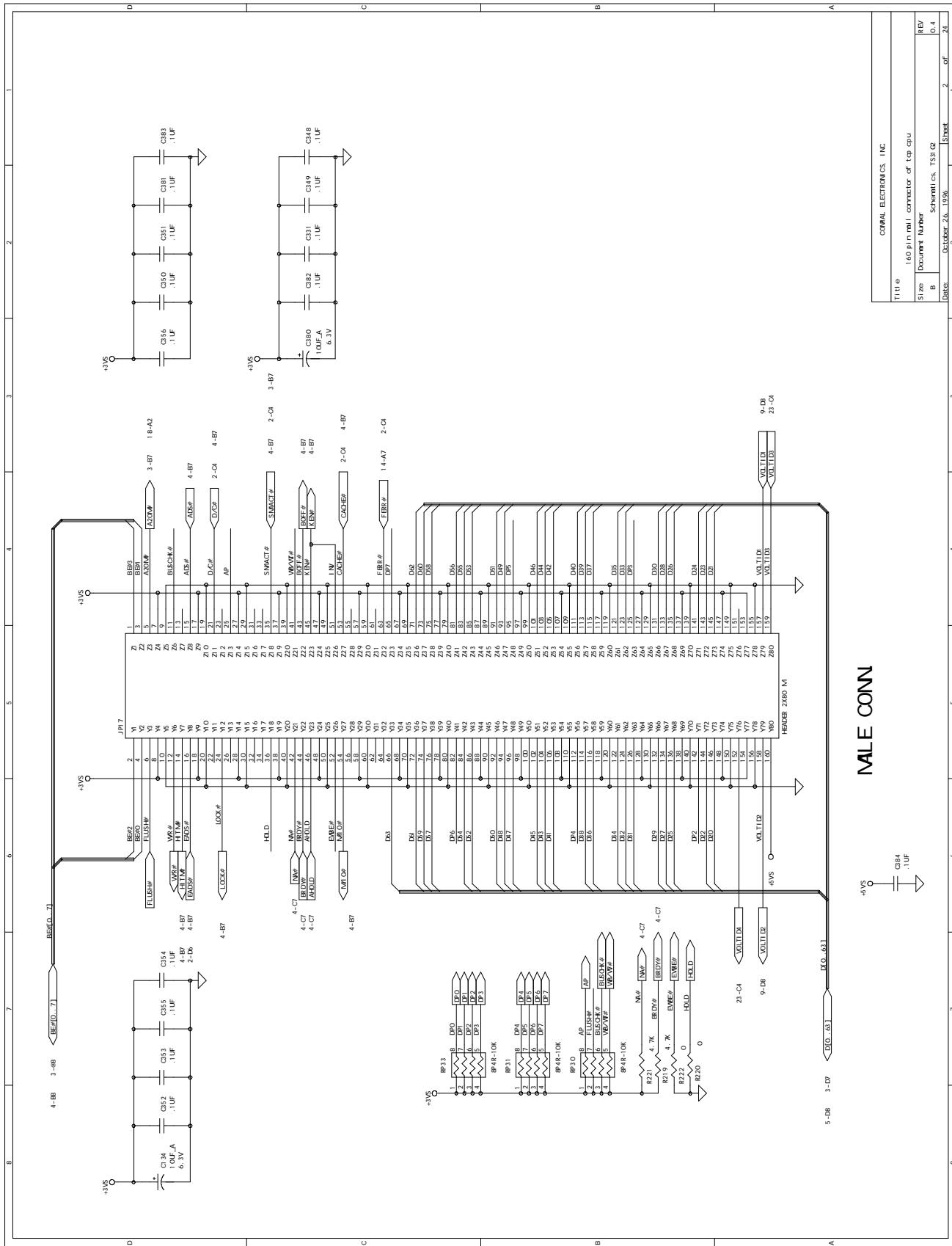
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Schematics
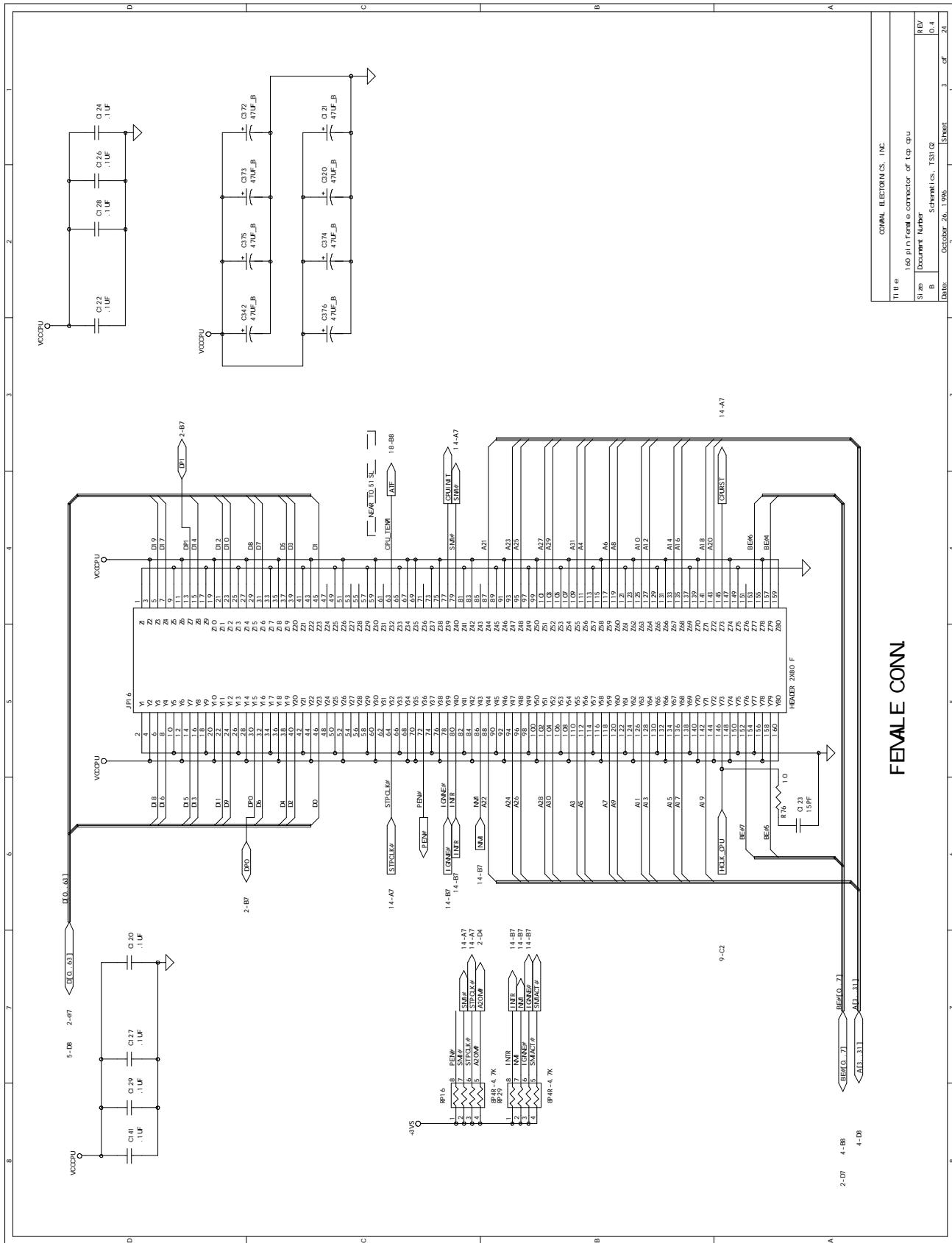
The following functional diagram gives the schematic sheet number(s) for each functional block.
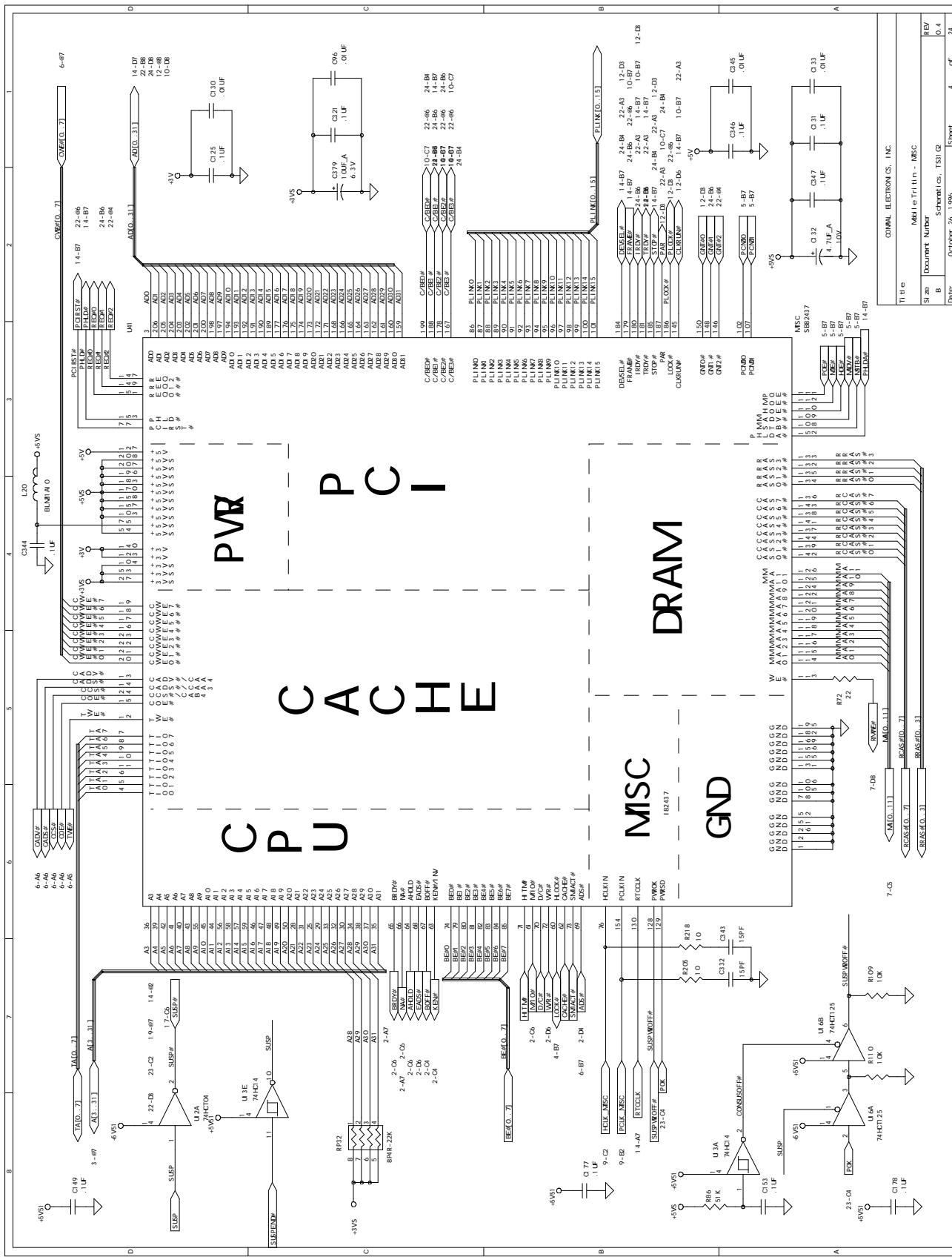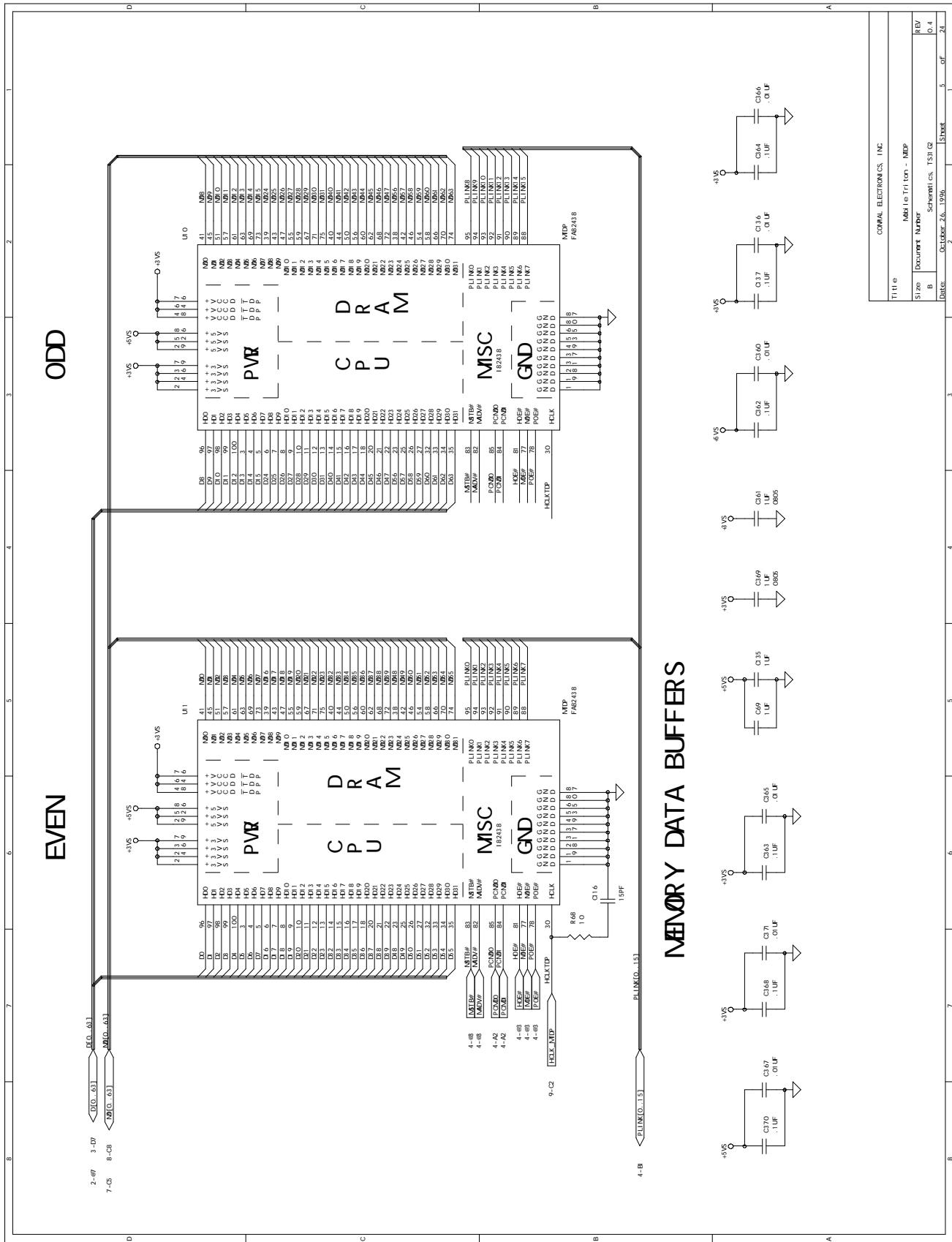
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PCI BUS

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KEYBOARD

TRACK PAD

Schematics

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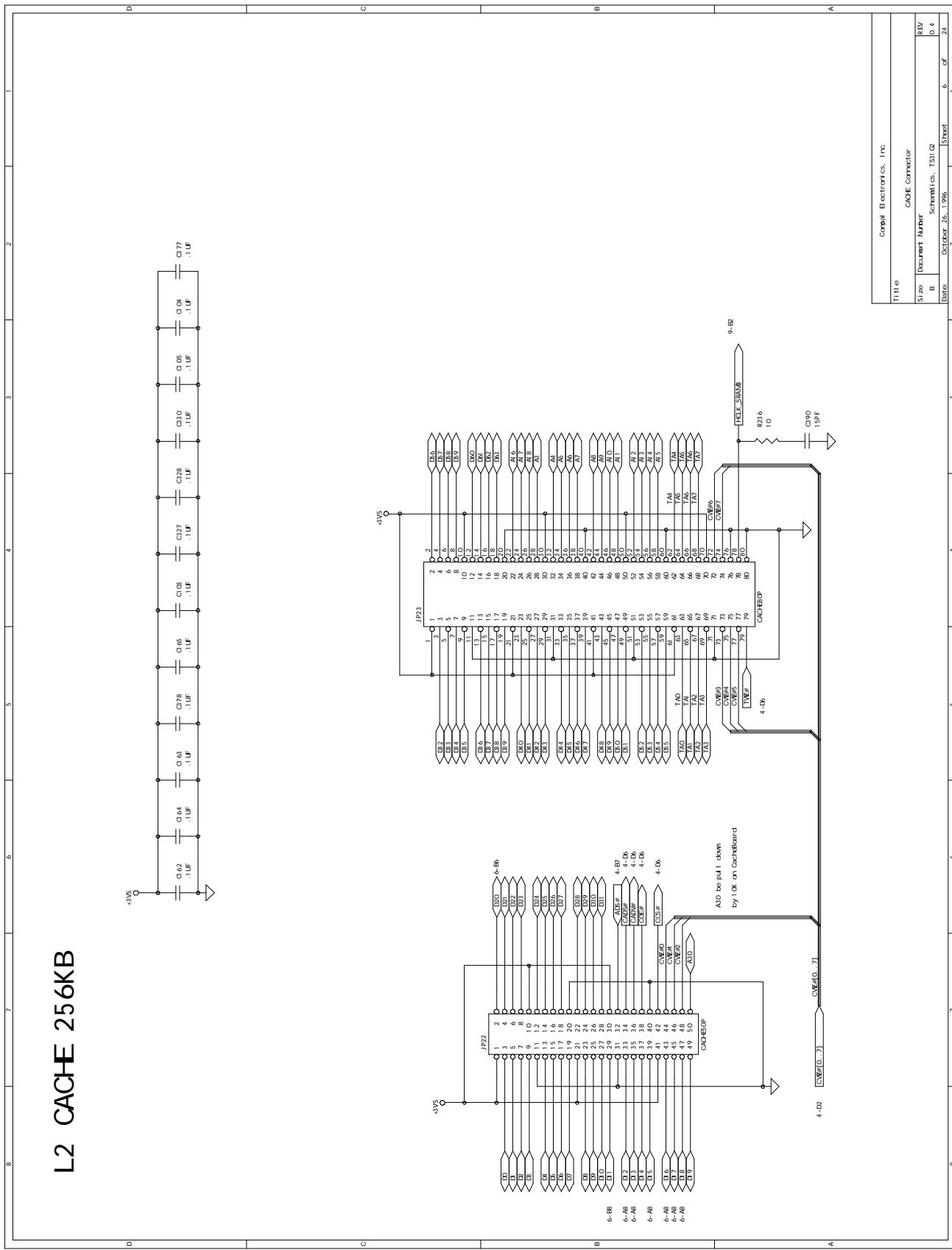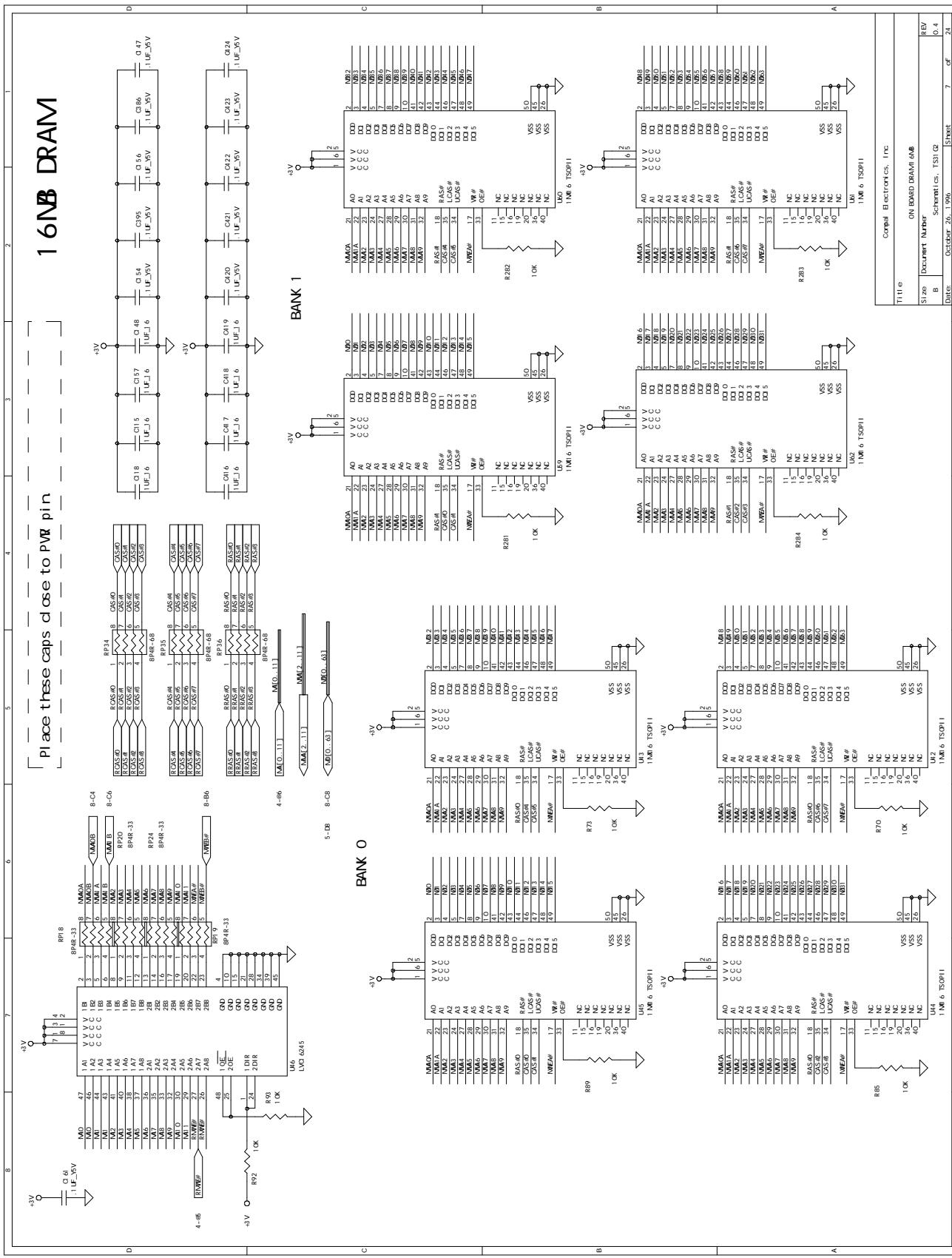
Schematics

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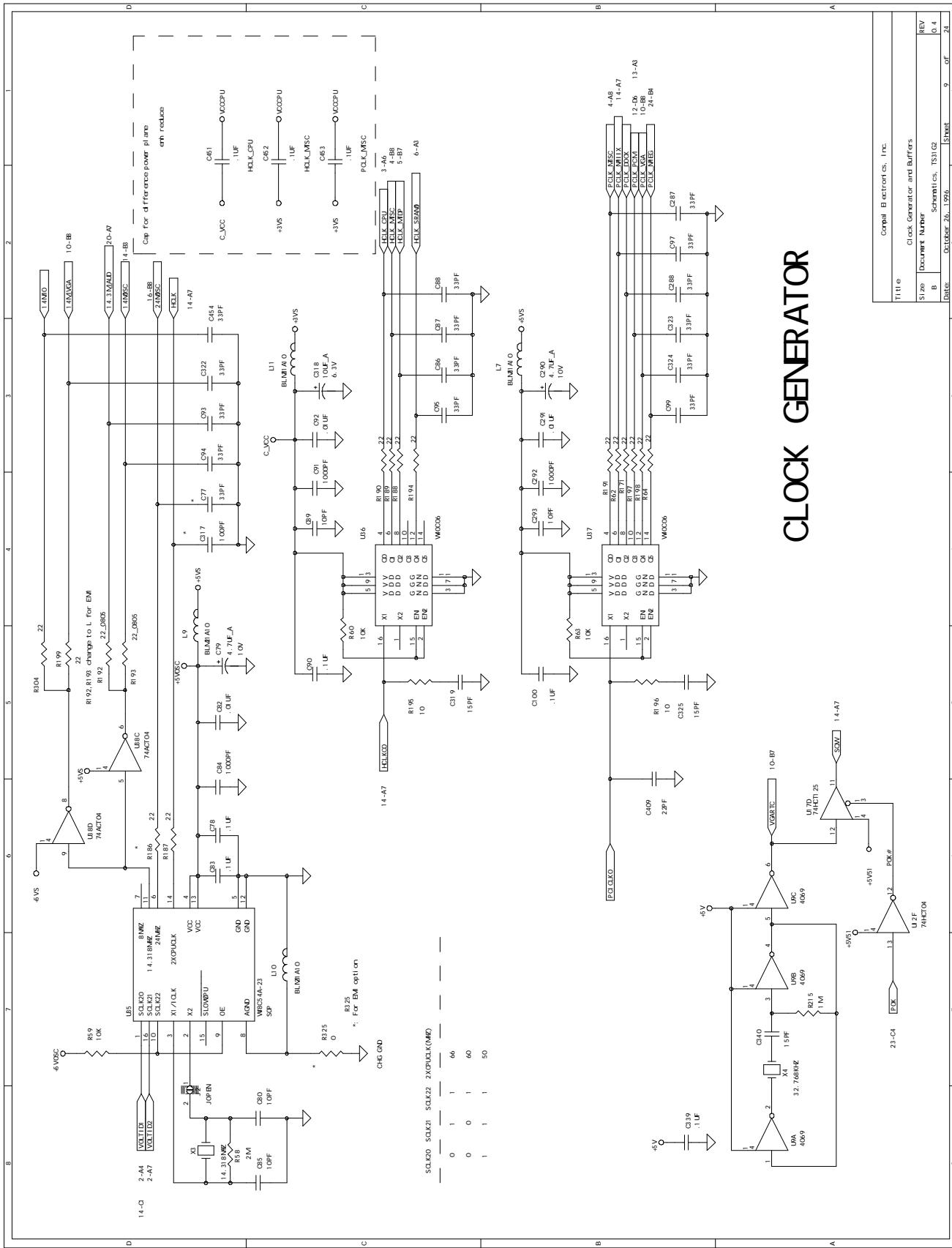
16MB DRAM

EXT. DRAM CONNECTOR

ROW2/3 HIGH

ROW2/3 LOW

CLOCK GENERATOR

Schematics

CARDBUS 6832
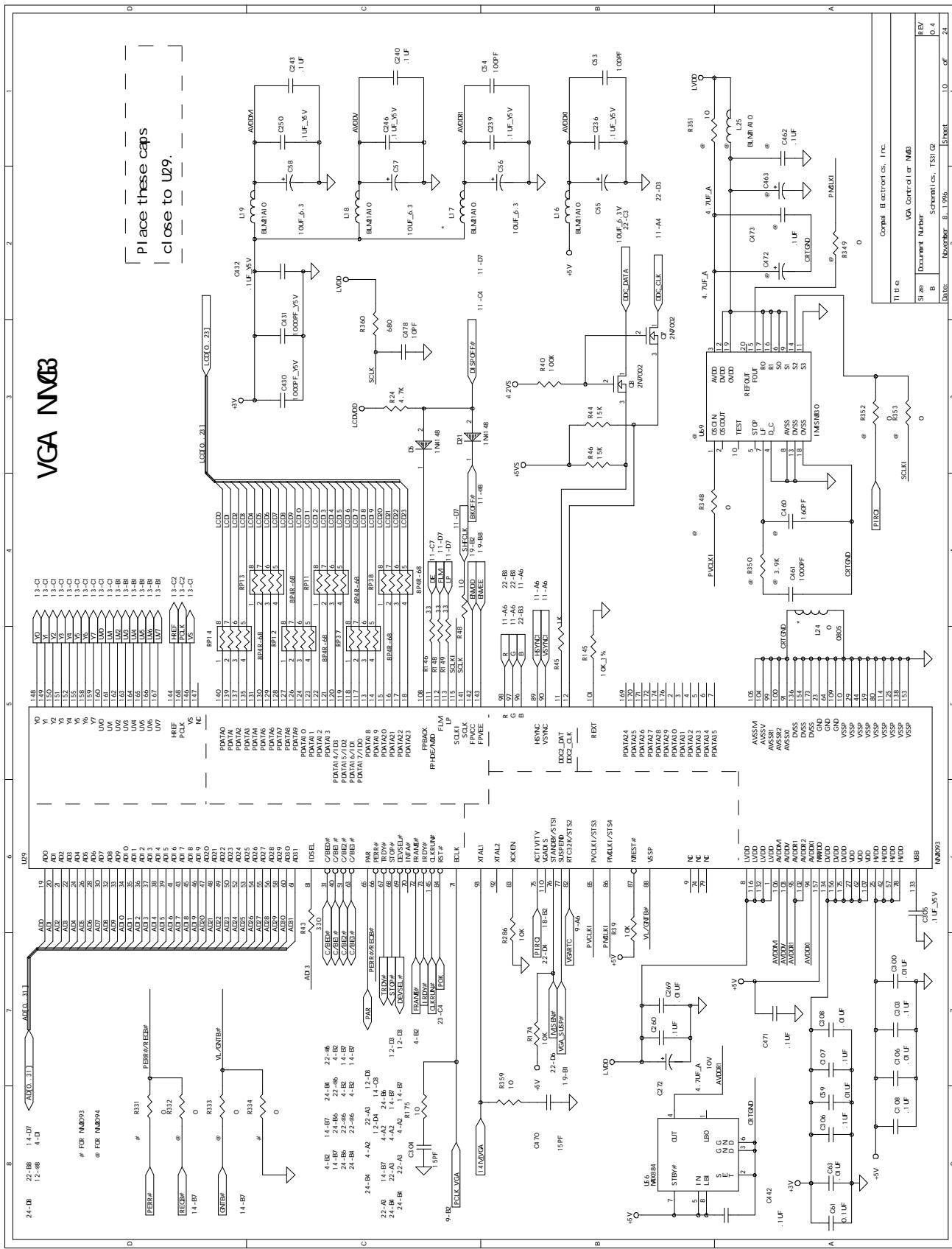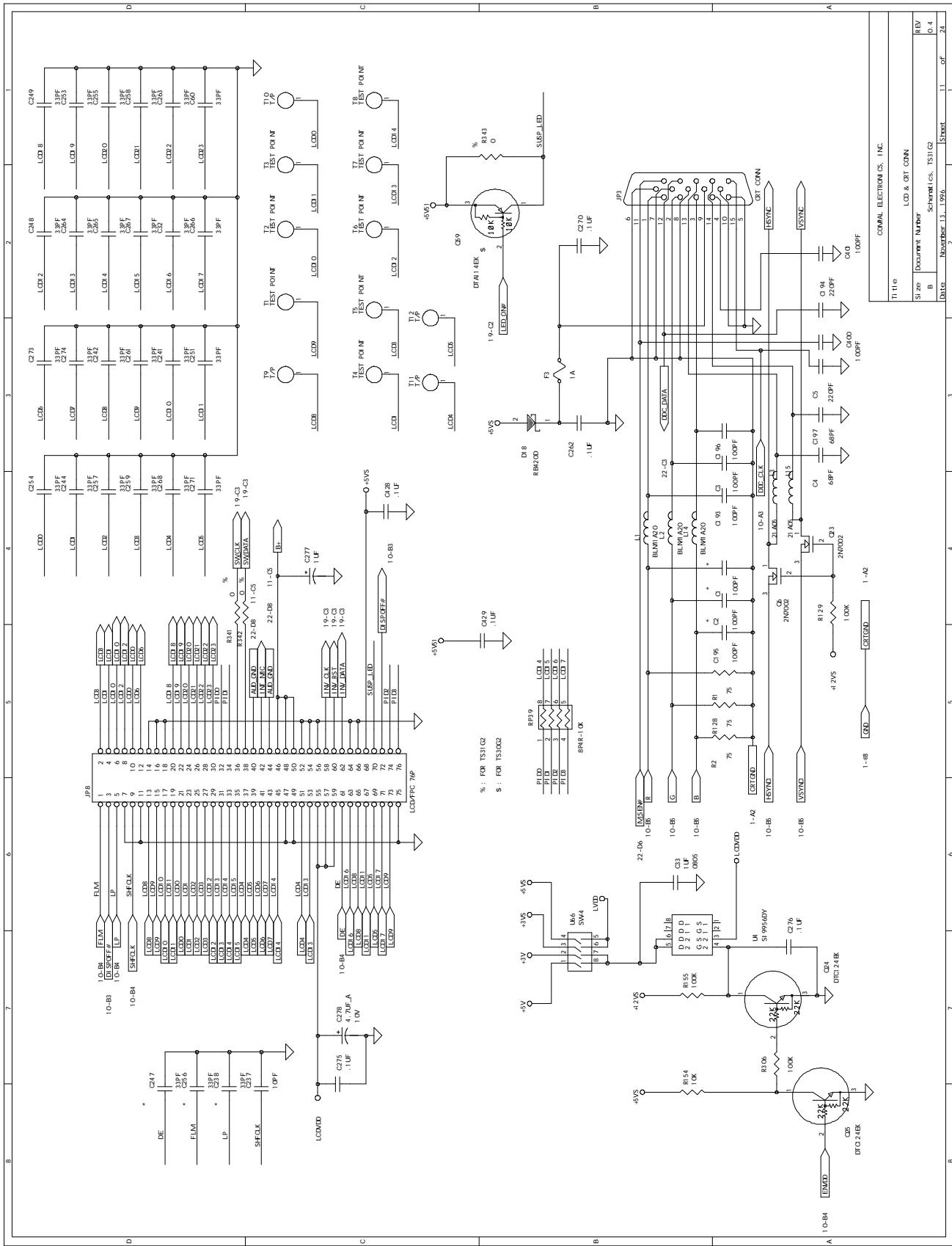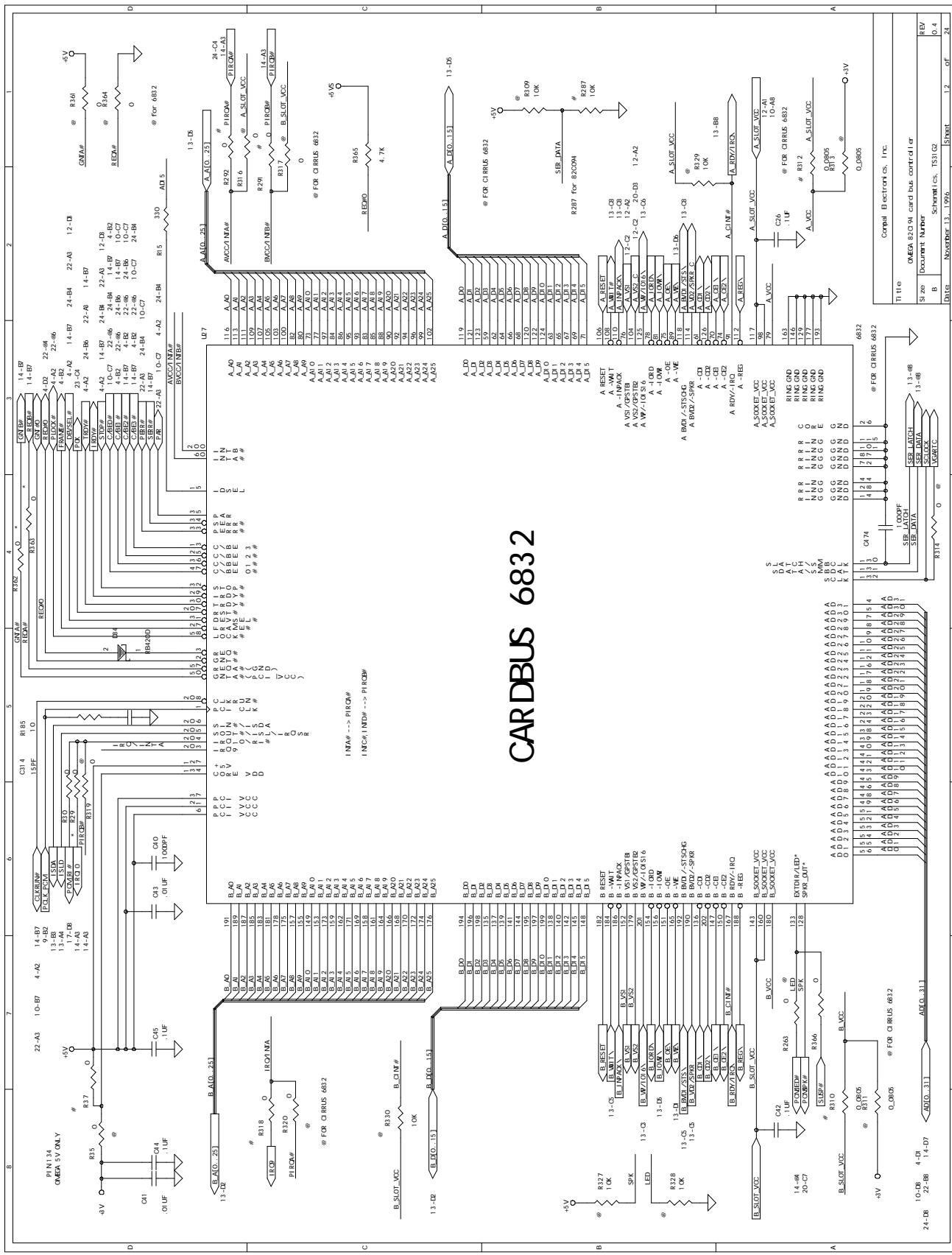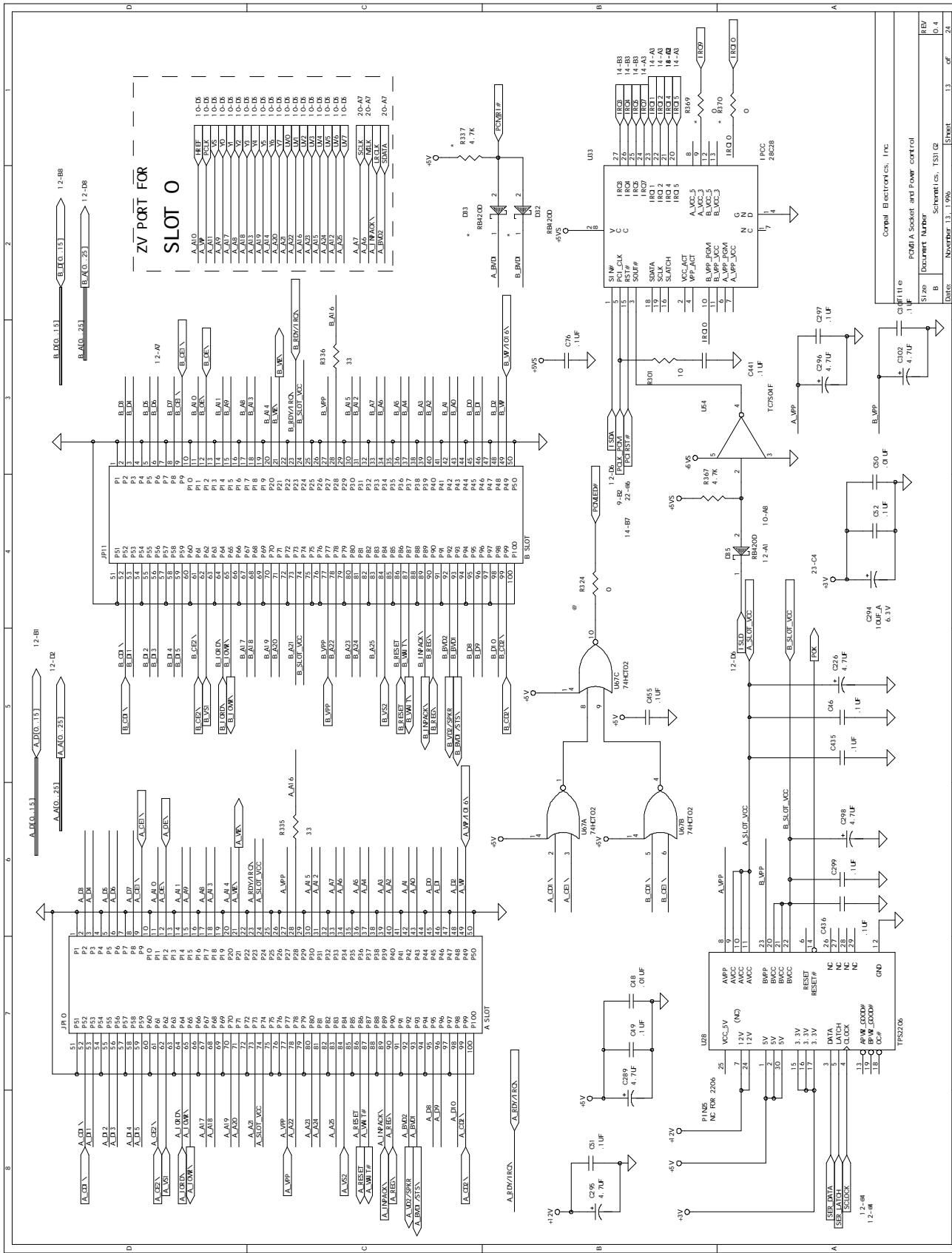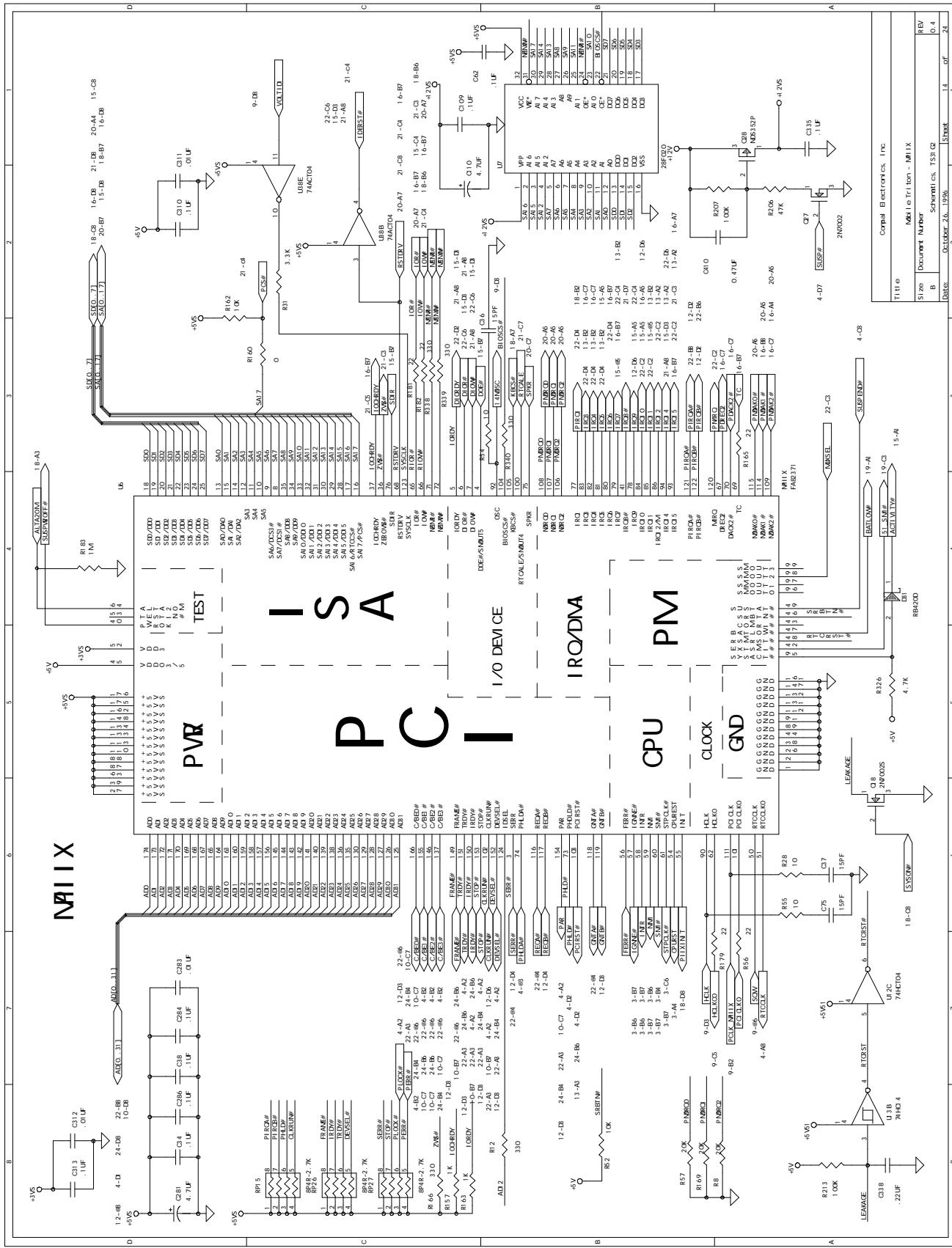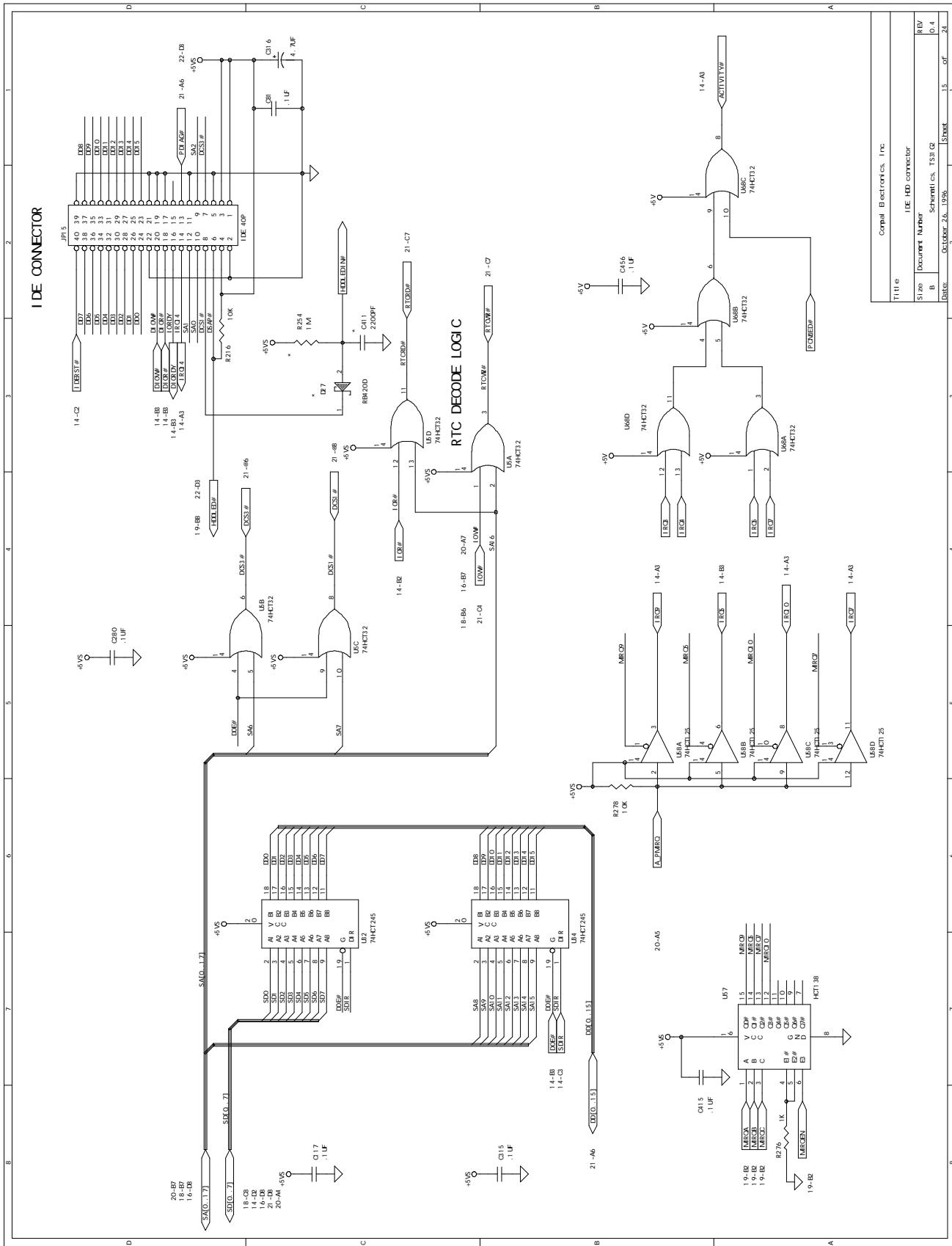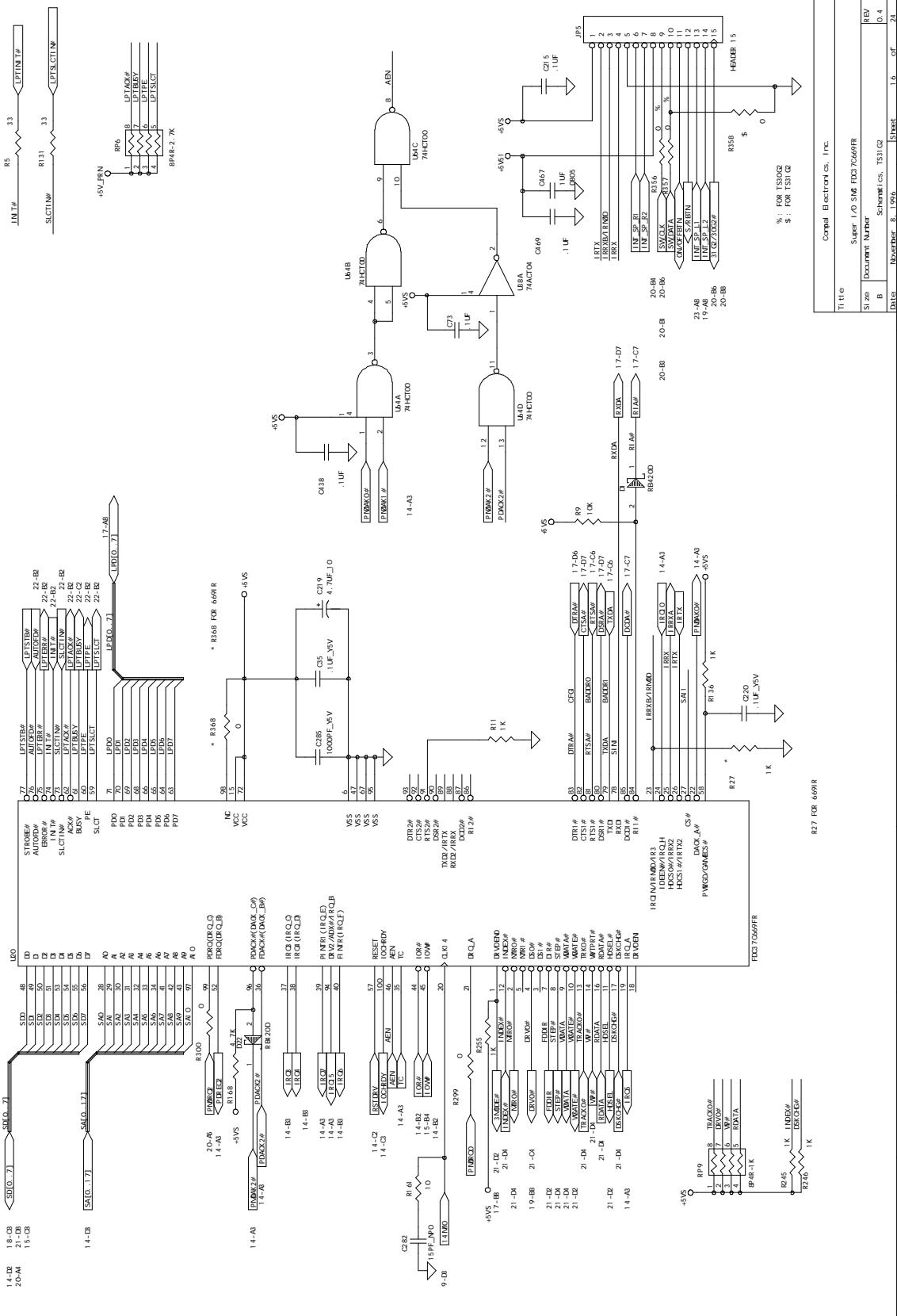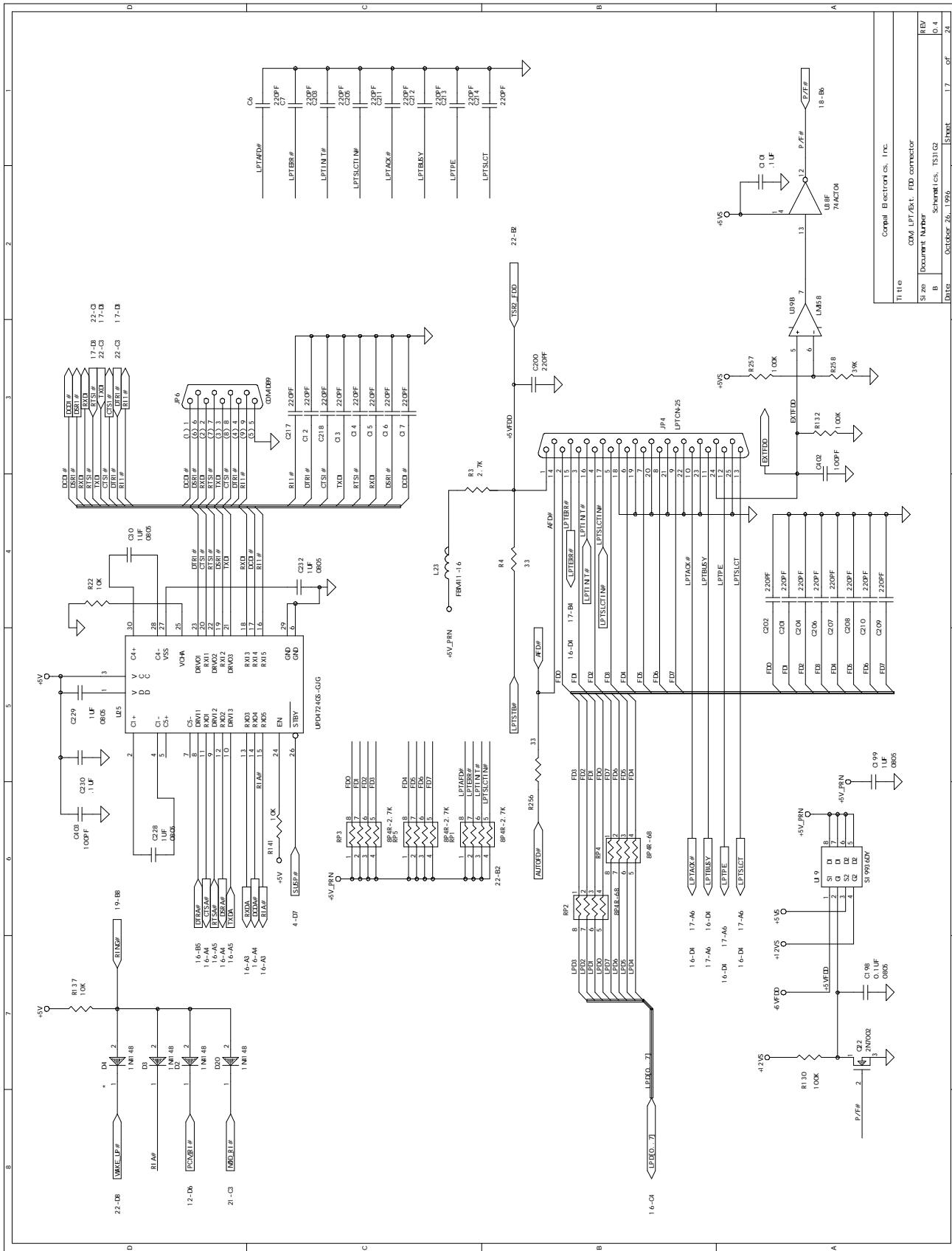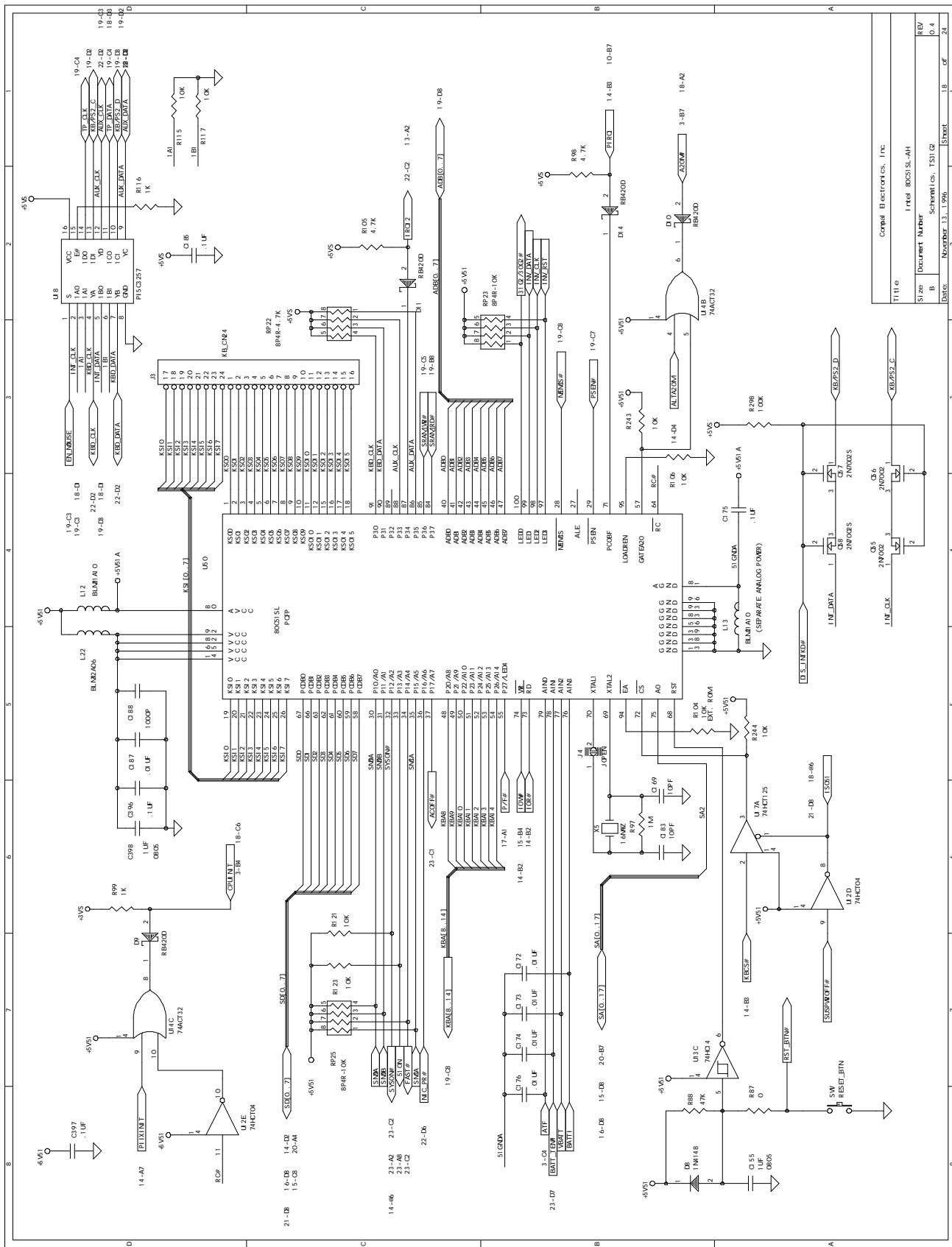
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SUPER I/O 37C669FR
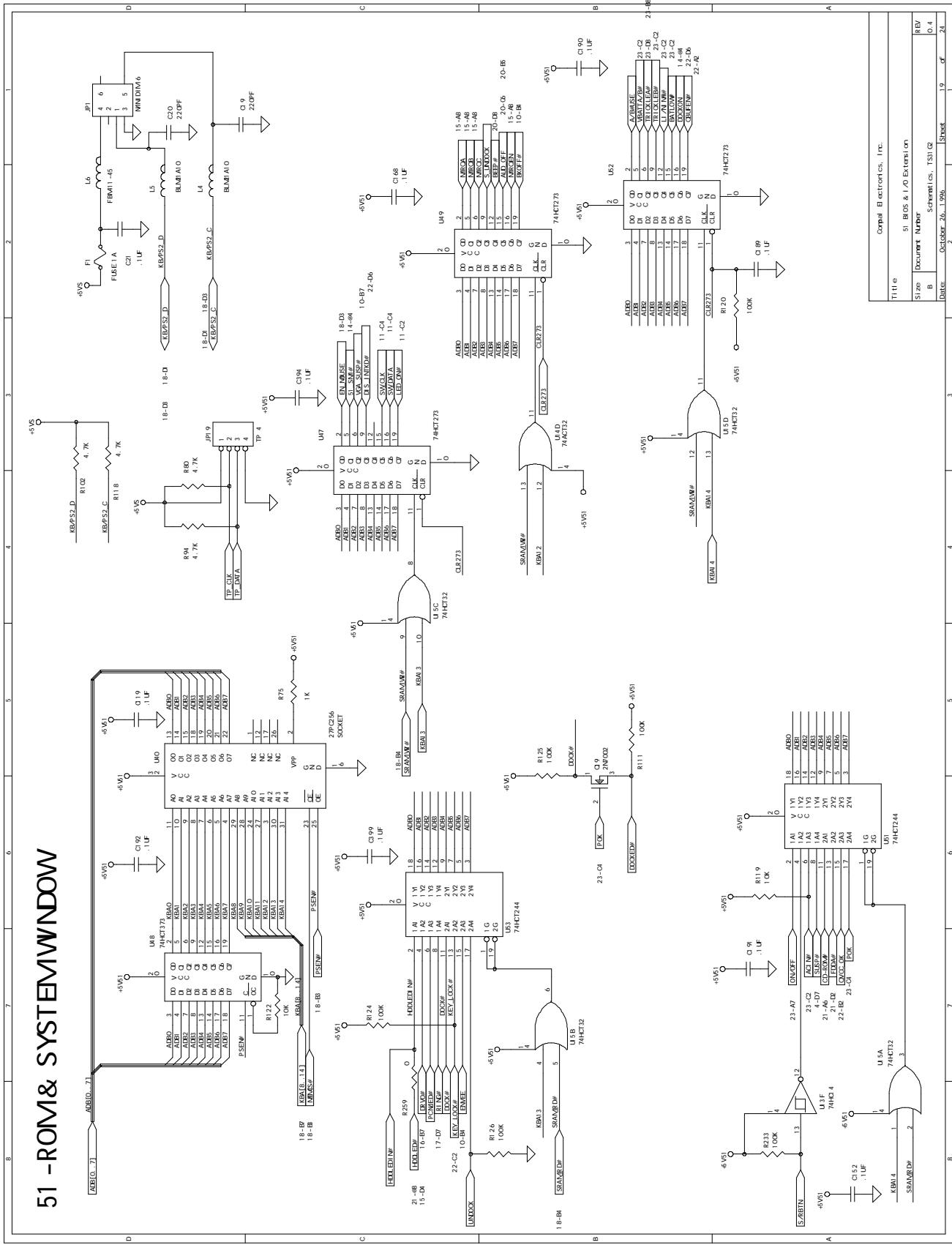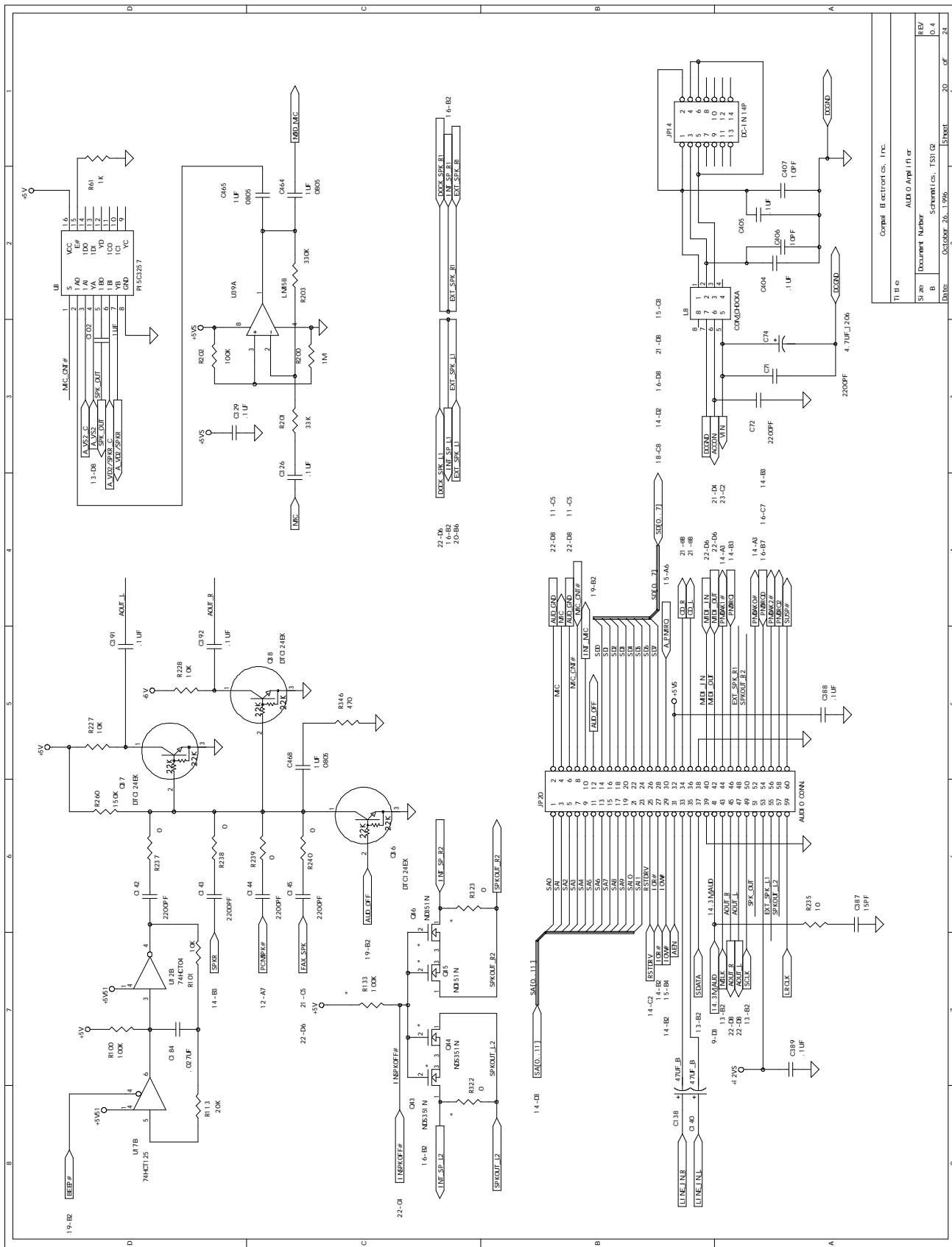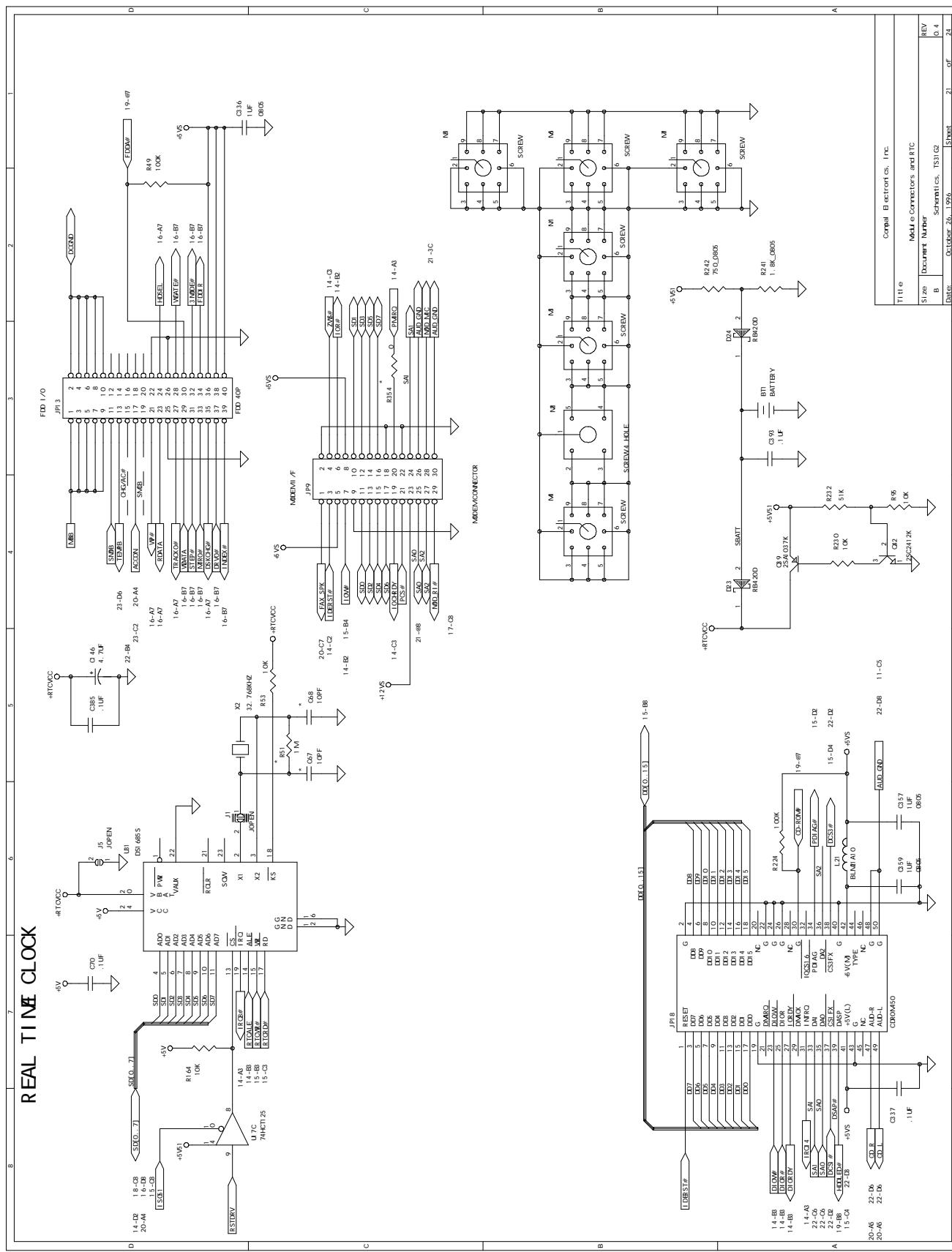
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